

THE JOURNAL OF MEDICAL EDUCATION

OFFICIAL PUBLICATION OF
THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES



October 1955 • VOLUME 30 • NUMBER 10

**66th Annual Meeting—October 24-26
Swampscott, Mass.**

- An Adventure in Teaching Obstetrical Pathology.....***Pearl M. Zeek*
Some Challenges in Hospital Administration.....*Jack Masur*
Medical Research—Today and Tomorrow.....*William H. Sebrell Jr.*
Project Teaching.....*Dale R. Coman*
Effect of Medical Education on Students' Attitudes....*Leonard D. Eron*
Program of 66th Annual Meeting

**A New Book—Guyton's
Textbook of Medical Physiology**

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The Journal of MEDICAL EDUCATION



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Journal of MEDICAL EDUCATION

WHAT EVERY PRACTITIONER SHOULD KNOW ABOUT

THE PHYSICIAN AND THE LAW

By **ROWLAND H. LONG, LL.B., LL.M.**

Lecturer in Forensic Medicine, New York University Postgraduate Medical School; Member of the New York and Massachusetts Bars.

with **FOREWORD** by **MILTON HELPERN, M.D.,**

The purpose of this new text is to provide the physician and student with a working knowledge of the rules of law which should govern his conduct in the physician-patient relationship; and to provide a helpful guide for the physician appearing in court as a witness to prove facts relating to injury, disease, and the causal relationship between them and death.

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The author is a distinguished member of the Massachusetts and New York Bars and writes against a background of a large experience in the preparation and trial of cases involving medicolegal problems and from his teaching experience as a Lecturer in Forensic Medicine at New York University Postgraduate Medical School. The Foreword is contributed by Milton Helpern, M.D., Chief Medical Examiner, City of New York and co-author of Gonzales' LEGAL MEDICINE, PATHOLOGY AND TOXICOLOGY.

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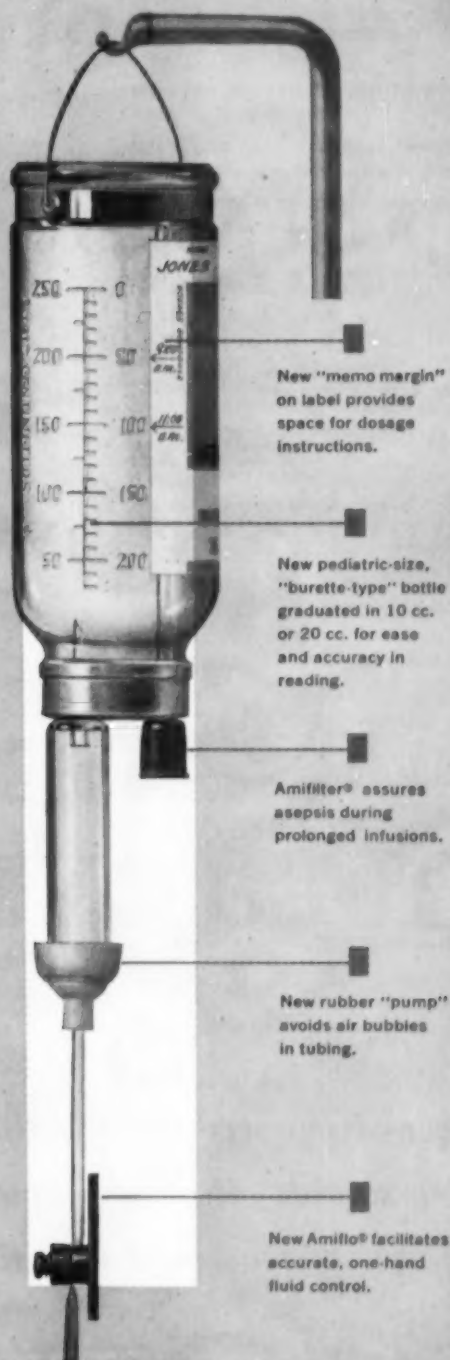
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Teaching Institute on Anatomy and Anthropology—October 19-22; Swampscott, Mass. (New Ocean House). (Attendance by invitation only).	
American College of Anesthesiologists—November 4-5; Hotel Statler, Boston.	International Academy of Pathology—April 24-26; Cincinnati, Ohio.
American College of Surgeons—October 31-November 4; Conrad Hilton Hotel, Chicago.	International Academy of Legal and Social Medicine—October 13-17; Genese, Italy.
American College of Cardiology, Interim Meeting—November 10-12; Hotel Claridge, Memphis, Tenn.	National Association for Mental Health—November 1-6; Sheraton-Lincoln Hotel, Indianapolis, Ind.
American Society of Tropical Medicine and Hygiene—November 2-5; The Somerset Hotel, Boston, Mass.	Pan American Congress of Ophthalmology—January 9-14, 1956; Santiago, Chile.
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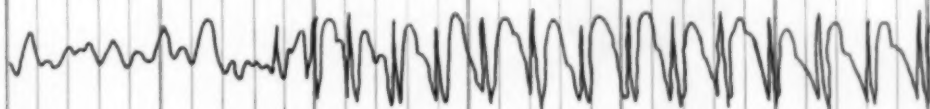
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Medical Research — Today and Tomorrow

WILLIAM H. SEBRELL JR.

ONE cannot see a structure such as the Mayo Memorial Building, or talk with those who have labored so hard to build it, without sharing their dreams and their satisfactions. The scope of this building and the diversity of its facilities mirror the increasing complexity of the interrelations among medical teaching, medical practice and medical research.

A great deal of deliberation must have been concerned with the problems that are inherent in converting the idea of the Mayo Memorial Building into an accomplished fact. There are problems of financing, of design and location and of program balance and emphasis, since no new building can encompass all the aspirations of its planners. But equal thought, I am sure, was given to the reasons behind the complexity, and the implications of this complexity to medicine in America. This building emphasizes the most clear-cut trend in medicine today—a trend which finds medical people and medical institutions trying to reassemble the bits and pieces into which medical science

has been fragmented as its substance and method have become more and more complex.

I am here to talk about medical research. I would like to make a series of observations on some of the major developments and issues in medical research, as I see them today and as they may affect the course of medical research tomorrow.

We are living in a period of total change in the orientation of medical research. Until recently, the focus of our research effort has been the infectious diseases; for them, the essential research problem was to identify and remove or destroy the causative organism. Such research did not require study of the details of the interactions among a host of factors within the body.

This is not to say that the research of several decades ago was simple. Indeed, the startling advances against some of the infectious diseases were the product of individual research brilliance with few parallels in modern times. What it does mean is that research today is becoming increasingly complex and varied, increasingly dependent upon new techniques and facilities and disciplines, as medical science probes deeper and deeper into the secrets of life itself in or-

Dr. Sebrell is director of the National Institutes of Health and assistant surgeon general of the Public Health Service. This article is adapted from an address given October 22, 1954, at the dedication ceremonies for the Mayo Memorial Building.

der to understand the chronic and degenerative diseases which have emerged as our major health problems.

Integrate Disease and Research

One of the most interesting and significant potentialities in medical science today lies in the integration of research on infectious and chronic disease. To an increasing degree, microbiology begins to present itself in what we now consider ultimate terms—as a set of problems largely in protein chemistry. The phenomena of immunology have moved from the grossly pragmatic level back through the stages of causation until we have arrived at the molecular level. Here, the broad generalization begins to emerge. It becomes clear that the process of biochemical synthesis is of a nature common not only to such microbiological phenomena as immunization and the propagation of viruses, but also to allergic phenomena, normal and abnormal growth and normal and abnormal metabolism.

As microbiological problems are studied on the basic ground of biochemistry, we may look ahead to advances in microbiology itself, and to contributions from the field of microbiology to other areas of investigation. Indeed, we may see a much wider range of relationships than is now recognized between the chain of events set off by infection and the subsequent development of some of the chronic diseases, such as rheumatic heart disease, the collagen diseases, and perhaps even cancer.

One must admit that precise quantitative measurement has been until quite recently a relatively unimportant aspect of medical research. It is indeed remarkable that the gigantic strides in the last half-century of

medical research were possible with slight reliance upon precise measurement, as compared with the physical sciences.

Because medicine remains both an art and a science, there can be no substitute for intuition sharpened by training, or for acute nonquantitative observation. Measurement cannot take the place of experienced clinical evaluation. Most certainly, elements of art will remain in medicine so long as we hold to the belief that the patient is more than a machine, and that the essence of biology is individual variation. At the same time, the hope for progress lies in enlarging the area of science and constricting the area of art.

There need be no conflict between the two. But one can anticipate that there will be stresses and strains between the art-minded and the number-minded people in medicine and medical research. As we enter an age of increasing interdependence between the laboratory scientist and the clinician, we can expect continuing problems in reconciling points of view which are philosophically compatible, but which in reality require special effort to be understood.

Science of Instrumentation

A corollary trend in medical research is the advance of the science of instrumentation itself. In science, the sequence is not always from hypothesis and observation to subsequent confirmation or modification. Often a new instrument itself is the generating force in science and the essential factor stimulating the generation of ideas. As Dr. Conant has said, "Tremendous spurts in the progress of the various sciences are almost always connected with the development of a new technique or the sudden emergence of a new concept. It is

as though a group of prospectors were hunting in barren ground and suddenly found a rich vein of ore. All at once everyone works feverishly, and the gold begins to flow."

The power added to medical research by measurement is accompanied by dangers. One of these is that data collection may become an end in itself, and that the relatively easy task of collecting data may divert the attention of too many investigators from the more difficult task of probing into the relevance of data and searching for concepts to unify the measured phenomena.

Another effect of quantification in science is the imposition of structuring on medical research. This comes about because the tasks required in the performance of many kinds of study demand such diverse and highly developed skills that they can rarely be found in one person. When a number of people work together, their work must be organized or they are relatively ineffective.

This structuring can sometimes be so spontaneous, informal and simple that none of the usual signs of organization exist—such as formal superior-subordinate relationships, or the specialization of function between scientists and administrators. Unfortunately, the size of the research groups required to deal effectively with many problems is such that more formal organization is often required. Since the size of these teams is largely a response to very fundamental developments in science itself, it seems likely that an increasing degree of organization will exist in medical research for years to come. Certainly one of the most challenging problems facing those concerned with medical research is to learn how the process of organization can be handled so that it contributes to, rather than detracts from, the scientific product.

The fact that the chronic and degenerative diseases are increasing in relative importance as causes of death and disability is established. So too is the dramatic increase in life span that permits more Americans to live into middle and older age groups in which the chronic illnesses are most prevalent.

Implications of Disease

I will not attempt to describe chronic disease research. Instead, I should like to step out of my research character for a moment and reflect on the revolutionary implications of chronic disease to the public health functions of government.

Traditionally, public health measures have centered around means of preventing communicable diseases—through ensuring the purity of public water supplies, through immunization programs, through provision of more effective sewage-disposal systems, through food and sanitation inspection and enforcement locally and interstate, through the imposition of quarantine measures, and so forth. Looking to the future, it is predictable that our gains will not be held unless this array of weapons is used even more effectively. It is also predictable that the advances of technology, the continuing shift of population groups to large urban areas, and similar economic and social factors will continue to generate new problems in the field of public health.

But overriding these developments in general significance is the vast shift in emphasis in fields of public health that will be forced by the inexorable increase in the incidence of chronic diseases. The major public health measures of tomorrow will be related to the prevention and earlier treatment of chronic disease.

The chain of reasoning which may

lead communities to accept a large degree of responsibility for the chronically ill is less direct than that which led communities in the past to accept responsibility for protecting their members against the spread of a communicable disease.

Not only is this chain of reasoning less direct, but it becomes bound up in considerations of how much responsibility the community *should* accept for the health of its members. For this reason, it seems that the public health movement will be in transition for years to come.

As is true of the role of public health, the role of medical research in the affairs of the nation has come under the close scrutiny during the past decade. These years have seen the emergence of a national medical research effort unprecedented in size and complexity. Again, as is true of public health, years will be required before all of the problems created by the rapid growth of medical research are resolved. One of these problems is the increasing reliance of medical research on Federal support.

Almost 50 per cent of all medical and related research in this country is carried out in universities, medical schools, hospitals and other private nonprofit institutions. Industrial concerns—largely the pharmaceutical industry—conduct about 30 per cent of the nation's total medical research, and government laboratories account for approximately 20 per cent.

Expenditures for medical research, nationwide, have more than doubled since World War II. Between 1947 and 1953, federal research appropriations increased from \$28 million to \$73 million a year. Over this same period, all private funds for medical research—from industry, philanthropy and institutional endowment—increased from \$60 million to \$100 million a year. This total investment

of \$173 million in 1953 appears to have risen to nearly \$200 million in 1954.

The Federal government both conducts research in its own laboratories and supports medical research in non-governmental institutions. The various military departments, the Atomic Energy Commission, the National Science Foundation, and the Public Health Service are the principal governmental granting agencies. Together, they disburse nearly \$50 million annually for research grants and contracts in the medical field. This represents about half of all the medical research conducted in nonprofit institutions.

In examining the implications of these figures, three things have struck me with particular force. First, an entirely new set of relationships between the Federal government and the universities has been created. Second, the financial base for university medical research has been drastically shifted. Third, our opportunity over the long run to expand productive medical research is dependent on manpower. Let us briefly examine some of the basic aspects of these observations.

The medical schools and universities are the very heart of this country's medical research effort. If this effort is to continue to be successful and responsive to the people's needs, it will be because such institutions are progressively augmented in facilities and resources, strengthened in both quality and quantity of medical and scientific manpower and encouraged to preserve their freedom and independence to establish their essential policies.

Before World War II, Federal support of medical research was inconsequential. Scientists in the medical schools and universities did not need to be particularly concerned with the

policies governing such support. Since the war, however, Federal support has increased until it is no longer possible for the universities to stand apart: they are vitally concerned with both the philosophy and the mechanisms of national research policy, and they should show their concern by effectively bringing to the attention of the Executive and Legislative Branches those factors which should be taken into account in policy-making at the national level. Such advice can come only from the medical schools and universities. It is their responsibility—both to themselves and to the country—to strengthen their role on the national scene by voicing their views on how Federal programs can be modified and improved to satisfy the research needs of scientists in private institutions.

Ensure Continuity

With such a rapid shift in medical research relationships, it becomes more important than ever that there be some way to ensure breadth and continuity in medical research—a way that is also desirable in terms of balance between private and public interests. Thus it becomes important for the universities to continue and extend their efforts to diversify their sources of support for medical research. The greater the funds available from endowment, from current gifts, from private foundations, from state appropriations and from all other nonfederal sources, the more secure will the universities become in controlling their own destiny. In fact, this principle of diversity applies to the parts of the Federal government as well.

A third area of broad national concern is the relative shortage of competent investigators in key segments

of the spectrum of medical and scientific disciplines. This too has its roots in the past. It will be remembered that in many institutions the medical schools were built up at the expense of the university sciences. Where integration was most needed, gaps continued to widen—separating clinical from preclinical science, medical school from university, university from teaching hospital.

Nationally, it is in the preclinical sciences that the most disturbing present and potential manpower shortages exist. Certainly in any far-sighted plan to increase and strengthen this country's total medical and scientific manpower, serious attention must be given to the university science departments and to secondary school curriculums, as well as to the medical schools themselves.

A concomitant problem is the trend in most medical schools and universities to permit a gradual weakening of research in the basic sciences and to foster research primarily clinical in nature. There are many explanations of this trend, which I do not need to enumerate for this audience. The essentiality of basic data as a springboard for medical and public health advances is well known. I mention this now because I feel it is vital for all medical research institutions and agencies, both private and public, to so administer their activities that insofar as possible there may be a balance between the laboratory sciences and clinical investigations, and a thoughtful integration of these, so that our stockpile of basic knowledge can continue to yield the wherewithal for clinical programs.

A vital aspect of the scientific manpower problem is the manner in which and the extent to which the conduct of research absorbs—or produces—manpower that would otherwise be available for teaching and also

available for health services.

With the sharp absolute and relative increase in medical research, there has been increasing dependence upon the scientific disciplines—either M.D.'s with supplemental training, or Ph.D.'s in the sciences related to medicine and biology. The size of the average research unit has increased, with an expansion of the average number of supporting people required per independent investigator. At the same time, the nature of current medical research is such that—without in any way minimizing the value of studies conducted by practicing physicians as individuals—most medical research is either a full-time job or research combined with teaching. All three of these factors have important implications for the future demand of research manpower.

About 12,000 senior investigators are engaged in medical and related investigation. Of these, probably not more than half—about 6,000—are physicians. Of this 6,000 less than one third combine teaching and various kinds of practice with research. As a rough estimate, probably not more than the equivalent of 4,000 physicians are engaged in medical research full-time. Of this group, some were doing research before the end of World War II. This is from a national total of roughly 200,000 practising physicians. Hence, the rapid postwar expansion of medical research has been accomplished without a marked diversion of physicians from medical care.

But it is equally evident that while the expansion of research in the medical schools has contributed to teaching in many respects, it has also created some very real difficulties in sustaining a sound teaching program.

Finally, I should like to reiterate the large responsibility the medical schools and universities have for progress that is vital to the continued well-being of our people—a responsibility out of all proportion to the number and size of the institutions that share it.

The last decade has witnessed the determination of medical and related institutions to meet these challenges, despite growing economic pressures that make it less and less feasible to conduct such programs without assistance beyond tuition and endowment or appropriations. Since the ultimate objective is the preservation of life itself, and since the medical schools and universities are performing a significant national service essential to the achievement of this goal, it is to be expected that further support should come from the outside. And it has—from physicians in private practice, from industry, from philanthropy, from voluntary agencies and from the Federal government. One of the big problems of our times is to find a way to provide a net increase in such outside support, to assure continuity of increased support, and to devise patterns of support which will guarantee the institution freedom to set its own policies and to plan and operate its own program without interference.

Effect of Medical Education on Medical Students' Attitudes

LEONARD D. ERON

RECENT research has indicated that a disproportionate number of medical students suffer from emotional disturbances. Strecker and his associates¹⁶ at the University of Pennsylvania found that 46 per cent of senior medical students had neurotic handicaps of a major character. Comparable results have been reported by Kohl⁶ at Cornell, Brosin⁴ at Chicago, and Wyler¹⁷ at Cincinnati. A study of third year medical students at our own institution has revealed a high incidence of personality maladjustment and, in some instances, more severe neurotic behavior of a type which could hinder productivity as a physician.¹⁴ It has been observed that medical students, as a group, tend to have certain attitudes, value systems and defenses which do not seem to be consonant with the demands and gratifications of a service-oriented profession^{3, 7, 12, 13.}

Certain questions are raised by the results of these studies: does the medical profession attract, and do the admissions committees select, a higher proportion of individuals with per-

sonality maladjustments than other professions? Or does the medical school curriculum itself encourage their development?

If the latter is true, what are the factors in medical education which are responsible for this effect? Once an individual has selected medicine as a profession and been selected by the profession, then do these personality maladjustments influence further the choice of specialty within medicine which he makes? And do they influence his ultimate success or failure as a medical student and physician?

To answer these questions definitely a longitudinal type of research is essential in which a group of pre-medical students are evaluated and then followed through medical school, internship, residency and into practice. Also a comparable control group in another field has to be studied and followed simultaneously to rule out the factor of mere aging in effecting such changes. In preparing for a long term study of this kind it is essential to determine which are the important variables to be evaluated, and then to devise the best possible techniques for measuring and assessing changes in them. This is being attempted by

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prior examination of large groups of students at different stages of their education in various fields. Some interesting findings have turned up in these preliminary studies, which of course need corroboration in a longitudinal design.

In the present report there will be a focus on one segment of this cross sectional research, which it is hoped provides tentative answers to some of the questions posed. The variables to be considered at this time are humanitarianism, cynicism and anxiety—their incidence and relationship among students preparing themselves for the medical profession. It is hypothesized for the purpose of this study that the cynicism which has been observed to be characteristic of medical students is related to the anxiety engendered by the traumatic nature of the subject matter with which medical students must deal. As a result they lose much of the humanitarianism, which it can be assumed was at least a small component in the complexity of their motivation for studying medicine. On the basis of this hypothesis the following predictions are made: Fourth year medical students will have more anxiety than first year medical students and will also be more cynical and less humanitarian. Those students who are most anxious will be more cynical and less humanitarian than the least anxious students. The choice of specialization which the students indicate will be related to the interaction of these three variables. All results will be more consistent for fourth year medical students than for entering students.

Subjects

The subjects for this experiment were paid volunteers. All members of the first and fourth year classes at

Yale Medical School were contacted by mail and asked to cooperate in this study. Of 79 members in the first year class, 78 volunteered; as did 60 of 63 in the fourth year class. These thus constitute virtually 100 per cent samples of the two populations. Other than in age and educational level, the two groups are very similar. Subjects in each group were classified according to type of undergraduate college attended (e.g., Ivy League, small New England men's college, Catholic, state university, etc.), high school or prep school attendance, and occupation of father (e.g., doctor, other profession, small business, etc.); and when the two groups were compared by chi square,⁶ there was no significant difference observed in any of these categories. There was also an equal proportion of males and females in each class. The first year students were seen during their third week in medical school; the fourth year students at the beginning of the second semester of the last year.

Procedure

The subjects were all seen in groups of approximately 30 for one session, lasting two to two-and-a-half hours, during which time they were administered a battery of questionnaire type psychological tests, including the Allport-Vernon Study of Values,² F and PEC Scales used in the Berkeley studies of authoritarianism,¹ the Sarason-Mandler General Anxiety Scale,¹¹ and scales of humanitarianism and cynicism specifically designed for this study. The present report is concerned only with results of the last three tests.

The anxiety scale consists of 40 statements or questions dealing with general anxiety symptoms on which each subject rates himself along a 10 cm. line, which, for scoring purposes,

Table 1
Group Anxiety, Cynicism and Humanitarianism Scores
of First and Fourth Year Medical Students

Variable	First Year (N = 78)			Fourth Year (N = 60)			Predict.	C/R	Sig.
	Mean	Range	SD	Mean	Range	SD			
Anxiety	131.85	55-203	31.78	132.45	54-202	32.28	+	.11	NS
Cynicism	87.00	50-133	18.37	94.72	56-141	17.70	+	2.51	.02
Humanitarianism	115.01	56-149	16.12	116.70	81-142	14.57	-	.65	NS

is later divided into nine intervals according to increasing manifestation of anxiety. Such questions are included as: "To what extent is the adequacy of your social adjustment a source of worry to you?" "How frequently do you find that you are unable to fall asleep because of some anxiety-provoking thought or experience?" "How often do you notice that your heart is pounding for causes other than physical exercise?" This scale of general anxiety has been used extensively by Sarason and his associates, and in published reports has been shown to have considerable validity and reliability with populations very similar to the ones in the present study.^{11, 15}

The cynicism and humanitarianism scales are of the Likert type,¹⁰ on which the subject rates the strength of his agreement or disagreement (six alternatives) with a series of statements. The responses are then converted into a seven point scale according to the extent to which the answer agrees with a cynical or humanitarian attitude, previously defined. Items were selected* which, it was felt, illustrated the following definitions taken from Webster's New International Dictionary, 2nd edition: *Cynicism*—"A contemptuous disbelief in man's sincerity of motives or rectitude of conduct, char-

acterized by the conviction that human conduct is suggested or directed by self-interest or self-indulgence". *Humanitarianism*—"A regard for the interests of mankind, benevolence, philanthropy."

About 100 cynicism items and 75 humanitarianism items were assembled. These items were then judged by three psychologists. Only those items were retained which the judges unanimously selected as expressing agreement or disagreement with a cynical or humanitarian attitude.

The cynicism items include such statements as "The law is often the refuge of slick operators;" "Most people make friends because friends are likely to be useful to them;" "I think most people would lie to get ahead" and "If you don't look out for yourself, nobody else will." The humanitarianism items include such statements as "When I hear about the suffering of a particular individual or group I want very much to help;" "The opportunity to 'do good works' is one of the most important aspects to be considered when selecting a vocation;" "Capital punishment should be abolished, it's a cruel and inhumane practice" and "If one has the opportunity, he should go out of his way to help another person even at the cost of some self-sacrifice." On the basis of agreements among the three psychologists, an original pool of 50 cynicism items and 30 humanitarianism items were first tried out on a sample of 351 subjects,

*The aid of Mrs. Florence Sultan in assembling these items is gratefully acknowledged.

Table 2
Correlations Between Variables

	First Year	Fourth Year	C/R	Significance
Humanitarianism—Cynicism .....	.26	.65	2.91	.004
Anxiety—Cynicism .....	.02	+.30	1.88	.06
Anxiety—Humanitarianism .....	.04	-.20	.94	NS

including Yale medical students, college undergraduates, nursing students and graduate nurses.* The scores on each of these items were correlated with the total scores obtained on cynicism and humanitarianism according to the chart and table developed by Flanagan⁵. This permits the estimation of the product-moment correlation coefficient between the item and total test score from the data of the top and bottom 27 per cent on total score. All items which had an estimated r with the total score below .40 were eliminated. Thus, the final humanitarianism scale administered to the medical school subjects contained 22 items, with a

median item validity of .60; and the final cynicism scale, 32 items with a median item validity of .55, constituting in this way two rather homogeneous scales. Odd-even reliability when corrected by the Spearman-Brown Formula⁶ was .78 for the cynicism measure and .81 for the humanitarianism measure. The inter-correlations of the three scales were: -.47 between humanitarianism and cynicism, +.21 between anxiety and cynicism, and -.09 between anxiety and humanitarianism. The latter was not significantly different from zero.

Results

The range, mean scores and standard deviations on the three scales for the two groups of subjects appear in Table 1. For one of the variables, cynicism, there is a significant difference in mean score in the predicted direction between the first and fourth year students. From this result it is

Table 3
Cynicism and Humanitarianism Scores of the Ten Subjects Scoring Highest and Ten Subjects Scoring Lowest on the Anxiety Scale

	Cynicism		Humanitarianism	
	First Year	Fourth Year	First Year	Fourth Year
Top Anxiety	95.0	104.1	108.8	107.2
Bottom Anxiety	94.4	82.8	111.7	121.5
t .....	.56	2.42	.39	2.03
df	19*	18	19	18
signif.	NS	.05	NS	.10

*The reason for the extra degree of freedom is that because the tenth highest score in this group was shared by two subjects, the comparison was based on an N of 21.

Table 4
Group Anxiety, Cynicism and Humanitarianism Scores of
First and Third Year Nursing Students

Variable	First Year (N = 41)		Third Year (N = 35)		C/R	Sig.
	Mean	SD	Mean	SD		
Anxiety	136.98	42.79	147.23	43.66	1.03	.N5
Cynicism	91.41	18.00	81.06	20.18	2.32	.05
Humanitarianism	125.15	14.34	118.65	12.18	2.13	.05

apparent that the seniors are quite certainly more cynical than the freshmen. On the anxiety scale, although the seniors have a higher mean score, as predicted, the difference is not significant. On the humanitarianism scale, the difference is not in the predicted direction, but again this is not significant. However, that all three variables are related to each other in a manner that is a function of the stage of medical education of the subjects is evident in a comparison of the correlations between the variables in the two groups (Table 2). In each case the relationship is higher for the seniors than for the freshmen, significantly so in two out of three correlations.

This relationship becomes clearer when those subjects with extreme scores on each of the variables in each of the two groups are separated out and their scores on the other two variables are compared. For example, in Table 3, when the 10 subjects scoring highest on the anxiety scale in each group are compared with the 10 subjects getting the lowest

scores on the anxiety scale in that group, it is found that among the freshmen there is no significant difference in the corresponding cynicism and humanitarianism scores while for the seniors there is. The same holds true when we take the subjects with the top and bottom cynicism scores and the top and bottom humanitarianism scores and compare the scores of those subjects on each of the other two variables. Thus, it would seem that by the time medical students become seniors there is a definite interaction among these three variables, although while they are still in the early part of their freshman year the effect is random. Further evidence for the greater homogeneity of the senior class is seen in the smaller standard deviations on every measure, except three, with which these students were evaluated (which, as indicated earlier, include many techniques in addition to those in the present report*). In the ma-

*Results obtained with other measures will be reported in a subsequent article.

Table 5
Mean Attitude Scale Scores of Fourth Year
Medical Students Who Have Indicated
A Specific Choice of Specialization

Specialty	Anxiety	Cynicism	Humanitarianism
Internal Medicine	131.38	83.50	116.09
Pediatrics	129.37	82.58	119.12
Psychiatry	170.75	96.75	118.75
Surgery	123.54	91.00	113.80

jority of cases the difference in the magnitude of the deviations was significant; in the three cases where the first year standard deviation was smaller, the difference from the fourth year standard deviation was not significant.

There is evidence that this is not an artifact which results from either increasing maturity or from a tendency for the misfits to drop out as a class proceeds from the first to fourth year. As for the first possibility, that the fourth year students are older and therefore their personality and attitudes more stabilized, thus making a more homogeneous group, this is contraindicated by a study of the responses of first and third year students at the Yale University School of Nursing which requires a bachelor's degree for admission. Table 4 presents the results of this study which are the exact opposite of the results with medical students. Thus, it would seem that increased maturity alone cannot be the cause of the results in either population. As for the second possibility, that the deviant individuals in a beginning group will tend to drop out, or be dropped, by the time they reach graduation, this is unlikely at the Yale School of Medicine where there is a small attrition rate and practically 100 per cent of an entering class graduates four years later. (The reason for the smaller number of subjects in the senior group in this study is that the size of the freshmen class had been increased in the intervening years.) Thus it would seem that the increasing homogeneity and consistency of results of the fourth year students is really a function of the exposure of all of them to the same kinds of experience.

Another factor to which these variables are related in an interesting

manner is the area of specialization in which the students indicate an interest. On each of the three variables there is a difference in the mean score obtained by fourth year students who say they will specialize in psychiatry, pediatrics, internal medicine or surgery, as indicated in Table 5. The same differentiation does not exist among first year students. Those fourth year students who indicate psychiatry as their specialty choice, rate as significantly more anxious (at the .05 level) than those who select internal medicine, pediatrics or surgery; and the "internists" are significantly higher on this scale than the "surgeons," although they are not so when compared with the "pediatricians." There is no significant difference between the "pediatricians" and "surgeons" on the anxiety scale. On the variable of cynicism, the seniors who select psychiatry again have the highest score, significantly (.05) greater than the "pediatricians," although not significantly greater than the others. On the humanitarianism scale there were no significant differences, although the "pediatricians" had the highest mean score and the "surgeons" the lowest. Since the total number of subjects in each of these groups is small, too much confidence cannot be held in these results, although it is interesting that they are not contrary to what would be predicted on the basis of stereotypes of the different kinds of specialists.

Discussion

It is easy to speculate about the nature of circumstances in medical education which might possibly foster the formation of the attitudes under consideration here, and other seemingly unhygienic reaction tendencies which have been noted in

the literature. These speculations, of course, now lack corroboration; but the kinds of experience which might possibly be important and whose effect should be assessed are such occurrences as the initial experiences with the cadaver, with the death of a patient and with chronic or hopeless disease. Also important are initial experiences with physical, gynecological or rectal examinations of patients of the same and opposite sex, autopsies, venereal patients, lumbar punctures, etc. Of interest are such things as the fear of error in diagnosis or prescription, the fear of contagion, the threat of failure in school, the protracted sexual conflicts, the conflict between research and practice, the long-term conflict over the dependent role the student usually must assume, the effect of limited recreational and social outlets, the growing realization of the student that persons will do implicitly what he orders despite his own sense of inadequacy in dealing with their problems.

An important adjustment the medical student must make is to the transition between the preclinical and clinical years. In the early phase of his studies he concentrates on rote mastery of the inanimate sciences where he is impressed with the uniformity of symptoms and the lawfulness of behavior. He is then abruptly confronted with living patients who have individual problems which cannot always be neatly classified as in the textbooks. Another important phase in the formation of attitudes is the long period of postgraduate training, during which time financial rewards are further delayed and earlier frustrations are compounded. Long-term research is necessary to determine how the student learns to handle these conflicts and anxieties, how the

solutions he works out generalize to other aspects of behavior and how persistent are the effects.

It is also tempting to speculate about the reason for the differences in the nursing student study, why senior nurses should be less cynical and also less humanitarian than freshmen nurses. These contrasting results may perhaps be attributed to such things as sex differences, the dissimilar roles which the doctor and nurse must assume toward each other and toward the patient, the difference in the intimacy and extent of contact with the patient, and the different outlets that are available to them for their anxiety. In the latter connection, a comparison of the scores obtained on the other two variables by the most anxious and least anxious subjects is pertinent. When the 10 subjects scoring highest on the anxiety variable among the nursing group are compared with the 10 subjects receiving the lowest anxiety scores, it is found that the most anxious subjects are significantly more cynical, and more humanitarian. This relationship between humanitarianism and anxiety among the nurses is just the opposite of what it is among medical students. Herein may lie the clue to the reason for the differences noted between the effect of the educational experiences on medical students and nurses, that is, in the handling of the anxiety aroused by the traumatic nature of the material with which each must deal. On the basis of results in this more or less superficial study it is impossible to determine what the crucial factors are in accounting for the differential management of anxiety. Again, a longitudinal research design in which the same subjects could be studied intensively over a long period might provide the answers.

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Some Challenges in Hospital Administration

JACK MASUR

IN preparing to talk briefly on a few of the broader challenges in my chosen specialty of administrative medicine, I could not help recalling the story of the daughter of a clergyman who was asked, "Sadie, does your papa ever preach the same sermon twice?" Sadie indulged in a moment's reflection and then replied, "Yes, I think he does; but I think he hollers in different places."

There is no need here to apologize for giving the same sermon twice. So long as the problems which plague hospital administrators have a bearing on patient care, we must continue to discuss and to analyze them and to hope that in the exchange of experiences we may turn up some universally satisfactory answers.

Despite the remarkable progress we have made in hospital management in this country—the systems we've installed, the efficiency machines, the timesaving devices, the streamlining of units—the fact is, the lot of the hospital administrator today is not a happy one. I would say that the lot of a hospital administrator is not a happy one because medical care is complex, personnel is scarce and hospital costs are high.

Dr. Masur is assistant surgeon general and chief, bureau of medical services, Public Health Service. This article is adapted from a speech given at the dedication ceremonies on October 22, 1964, of the Mayo Memorial, University of Minnesota.

These fundamental factors create problems which are common to all of us in hospital administration. Some are periodic; some perplex us daily; some I do not feel competent to deal with—perhaps because they are so fraught with emotions and are intertwined with our sense of occupational security.

In a delightful essay in *Lancet* on "A Philosophy of Hospital Administration," Dr. Stephen Taylor points out that administrators in each field try to prove that their particular job is unique. He observes that the major peculiarities discerned in hospital administration spring from its relation with illness and the emotions which illness arouses—and also "from its relation with the most powerful and affluent of all professions, the medical profession." Thus, the hospital administrator is apt to consider himself less a master in his house than any other administrator.

If one were to attempt to defend this thesis, he could look to the interrelationships between the administrator and the physician or perhaps even to the *modus vivendi* between the administrator and clinician and laboratory scientist. It would be too simple to accept with a weary sense of philosophical reflection the off-repeated truism, "Nobody loves the front office"—the idea that we must

seek a sort of peaceful coexistence or a kind of obligatory symbiosis.

Our sociologist friends ponder the charismatic status of the physician in his role as a healer. They tell us that such charismatic authority is, by Weber's definition, "specifically outside the realm of everyday authority" and is "foreign to all rules," including bureaucratic authority, traditional authority and rational authority. These are high-sounding phrases, but they point to the dilemma in which we find ourselves when we are confronted with the charge that our managerial prerogatives intrude on—or even shackle—the relationships between the doctor and the patient.

It is only half a comfort to observe that the same predicament faces the scientist-turned-administrator who discovers that budgets, communications and public relations occasionally make him the butt of interfering with the idealistic "freedom of research." I still remember the frenzied outcry of a much-beloved famous scientist-skipper of mine who wondered, "When the dickens are we going to get some freedom of administration around here?"

I venture to deal with four particular areas of challenge—or hope—in hospital administration which sometimes tend to be neglected in our preoccupation with the mechanics of management.

The first is, the need for discharging our unmet responsibilities in the rehabilitation of patients. Second, the need for applied research in departmental functions, hospital design and administrative indices. Third, the need for an intelligent adaptation to the consequences of the phenomenal increase in hospital insurance coverage of the population. And, fourth, the need for more sophistication in the education and training of addi-

tional hospital administrators.

Disease and Rehabilitation

The rapid increase in the number of people in our population with long term illness brings into focus our deficiencies in the treatment of disabled persons.

The whole question of the responsibility of the physician, of the hospital, of the health agency, brings vividly to my mind a small statue which I saw a great many years ago on the mantle in the late Dr. Corwin's office at the New York Academy of Medicine—a statue of a patient discharged from a hospital:

It is a pathetic little figure of a man, coat collar turned up and shoulders hunched against the chill winds, clutching his belongings in a paper bag—shaking, tremulous, discouraged. He's clearly unfit for work—no employer would dare to take a chance on hiring him. You know that he will need much more help before he can face the world with shoulders back and confidence in himself. You suspect that he may never be able to go back to the work he has done before his illness. Past the age of 50, he will have to learn how to do a different kind of work if he is to be self-supporting. You think that he was probably once the responsible breadwinner of a family, husband and father, proud of his ability to earn enough to feed, clothe and educate his children. Now his present weakness is shaking him; his self-respect is deeply damaged. He is discouraged and frightened. This is the man who has been discharged with the cryptic notation on his medical chart: "Discharged—Cured."

The statuette epitomizes the task of medical rehabilitation: to bridge the gap between the sick and a job. Those of us who work in hospitals must

join with education, social work, employment placement, vocational guidance and any number of related services to provide patients with the help they need to restore them to their maximum functioning. It means that, more than ever, physicians in hospitals must realize that their job is not ended when the fever is down, or the sutures out or "clinical cure" has been achieved. It means that rehabilitation does not limit itself to amputees or paraplegics, but that we need to think in terms of the bookkeeper with glaucoma, the welder with diabetes, the furrier with asthma and the truck driver with diminishing hearing. It means that we shall have to concentrate on the ends as well as the means in the management of patients.

It has been something of a feat on the part of most of us that we have managed so long to insulate ourselves from the rehabilitation problems of our patients—from the way they feel about their illness, their frustration of personal achievement, their insecurity resulting from social and economic dependence. The painful fact has been coming home to us that in neglecting this aspect of our training of interns and residents, our physicians are not as well equipped to handle the manifold problems involved in leading the rehabilitation team and in managing the coordination of the many professional services that comprise a comprehensive program of rehabilitation.

We have a network of state vocational rehabilitation agencies and a limited number of voluntary rehabilitation agencies ready and willing to cooperate with physicians, hospitals and social agencies. The President and the Congress have made additional funds available for the construction of rehabilitation facilities and the training of much needed per-

sonnel. With the realization that we shall have to make fundamental changes in our traditional ways of thinking about our responsibilities to our patients—that our job is not done when the acute phase of illness ends—we shall enable the handicapped person to live, as Howard Rusk has so well said, "not just within the limits of his disability, but to the hilt of his capabilities."

Until we fulfill our obligation to help patients to help themselves, hospitals will continue to carry an unnecessarily large proportion of patients who, instead of being hospitalized, should be benefitting from our cumulative social and scientific techniques. By our failure to provide adequate rehabilitation services, we encourage attitudes and perpetuate a dependency which is demoralizing to the individual, unsound economically and costly and impractical from the standpoint of the hospital.

Need for Applied Research

In the widely disparate patterns of organization, administration and control of our hospitals, we have an urgent need for applied research in many areas of our work—for example, the design of hospitals, the analysis of departmental functions and the improvement of quantitative and qualitative indices.

We are still in an era of great activity in the construction of hospitals, yet we lack sufficient resources to appraise objectively the functional efficiency of our architectural design. The advent of early ambulation, antibiotics for the control of cross infection and economical air conditioning have not yet had full impact on design concepts—some of which are outmoded and are repeated and carried over into new structures through force of habit.

To cite but a few instances of study challenges, we lack data on: (1) the optimum size of a ward unit to combine the dignity of privacy with the amenities of congenial company when we feel like it; (2) an efficient and economical method of delivering to the bedside food like mother used to cook; (3) the quiet peace of controlled acoustics combined with the comfort of good reading light and (4) a 20th century device for disposing of human wastes for the bed-bound patient.

The accomplishments of Marshall Shaffer and his associates and the Nuffield Trust in England reveal the potential in the area of hospital design.

Closely tied in with the need for progress in architectural design is the want of good studies in the functioning of various departments of the hospital. The effective utilization of personnel is a "must" not only because of the chronic shortage, but because turnover of hospital personnel is one of the most expensive parts of the bill the patient must pay. The studies of Lucile Petry and Margaret Arnstein and associates on the proper allocation of functions to various members of the nursing team, illustrate the possibilities inherent in applied research in the hospital field.

The rapid rise in hospital costs in an inflationary decade has placed us on the defensive in justifying our operating programs. We point to the competitive market for personnel, the shorter work week and the rise in price of material.

I cannot help but feel that a major challenge to our managerial responsibility is a realization that our measurements of work accomplished are faulty.

We talk too superficially of "cost per bed" in the construction of hospitals.

We mix up pineapples and crab apples when we use comparisons in "personnel-patient ratios."

The worst example is the empty formula of "occupancy rates," without regard to length of stay or turnover interval.

We tabulate "costs per inpatient day"—as a symptom of our obsession with bed care—almost without perception of the rate of utilization, the proportion of seriously ill and complicated cases and the changing demands of outpatient care.

We have only just begun to devise methodology which can be applied in hospitals of all kinds to give us a more realistic expression of workload and personnel. And certainly we have a heap to do all at once to narrow the gap in understanding between those who spend the money and those who furnish the money.

The desiderata of qualitative evaluation of our patient care should perhaps have been placed in the first part of this discussion on "it's things like this make me nervous,"—things that perplex us but for which we cannot compose tidy answers because they have such an admixture of rational and emotional components.

I do not know if "quality" is too intangible and subjective a factor to be appraised by existing criteria. This is a grave difficulty for accreditation groups. The Joint Commission on Accreditation of Hospitals is striving to come to grips with qualitative indices that will be meaningful.

We have, in the group of challenges in these areas, a rare opportunity for the universities, foundations and government to unite in a collective effort to devise sharper instruments of administrative precision.

If there be a fault, it lies not in ignorance of the facts but in our inescapable preoccupation with getting necessary care to patients. Engrossed

as we are with the myriad problems of providing services, we find it difficult—if not impossible—to take time for self-analysis, for the meticulous examination of administrative practices, which is essential to management improvement and, of course, to better patient care.

Impact of Health Insurance

In the last two decades, we have witnessed an astonishing growth of voluntary and commercial health insurance plans in this country.

More than half the people in this nation carry some form of "service" or "cash indemnity" medical care insurance, although most do not have comprehensive coverage. This salutary development has improved the financial stability of hospitals and has enabled the sick to receive care earlier, more frequently and in greater amount.

There is an abundant literature dealing with the achievements, deficiencies and growing pains of prepayment and insurance protection in health. It reflects a universal acceptance of a useful device for paying the costs of professional and hospital services.

The major shortcoming, representing one of our challenges here today, is the emphasis on benefits to the "horizontal patient" in the hospital instead of to the "vertical patient" in the physician's office or clinic.

Preventive and diagnostic services are absent in almost all insurance plans. We are failing to accentuate the positive when we do not make it possible for apparently healthy people to seek early attention, and thus uncover incipient illness. With the present limitations in benefits for subscribers we are doing a salvage job instead of providing protection.

With our emphasis on the most expensive institutional repair of the acutely ill patient, we not only impede the provision of preventive services but we block off the possibilities of expanding the insurance principle to our ever growing burden of chronic illness in the office, clinic, hospital, nursing home and patient's home.

As the Surgeon General has expressed it so aptly in another area, we are missing "the whole purpose of public health and medicine: to prevent, to heal, to restore; in short, to keep people out of hospital beds as often as possible, and as long as possible."

Education and Training

And now for a fourth turn of the prayer wheel. For many years, there was an increasing awareness that the apprenticeship method would not suffice to insure an adequate supply of hospital administrators. There was a growing need for a formal curriculum in universities to prepare graduate students for careers in hospital administration. The objective of the training process was to select and train candidates on a professional plane so that they could acquire a broad knowledge of the place of the health services in society, plus the ability to get along with people in the hospital's "ritualized" social environment; they would also, of course, achieve a competent knowledge of administrative management techniques.

The peak demand for formal preparation in hospital administration began in the 1945 to 1950 period. All but one of our present 16 university programs have been established in the past ten years; 13 of these are degree granting courses. They have been located in schools of public

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health, schools of business, schools of commerce, graduate schools and schools of medicine.

There has been a singular lack of interest on the part of physicians in seeking training for hospital administration. It would seem as though doctors stand with reluctant feet where medicine and big business meet. The graduates of the courses, with varied educational backgrounds, are serving faithfully and well and have moved into the breach in a period of great expansion in hospital facilities.

Meanwhile, the university faculties have been sensitive to the need for appraisal of their diverse and rapidly evolving courses of instruction and residency training. Are the courses adequate? Do they come to grips with the problems to be encountered in hospital management? Do they develop the qualities of leadership? Do they instill devotion to the cause of health and, more particularly, to the individuals whose needs we attempt to serve in our various institutions?

These are some of the questions which have been asked. The answer is perhaps best expressed by the cartoon of the terrible-tempered business executive, banging on his desk and bellowing at his secretary, "I may not know what I want, BUT I AM NOT GETTING IT!"

Thus, the Association of University Programs in Hospital Administration, inaugurated two years ago an intensive study by a commission, headed by Professor James Hamilton.

The report is an incisive, penetrating study that focuses sharply on the challenge of improving our task in preparing our successors for leadership. There will unquestionably be sharp differences of opinion on some of the conclusions, but we are now in a position to define our objectives more precisely in readying young

men and women for the executive functions in scientific administration.

This is our most immediate challenge, for the advancement of hospital service will reflect the professional leadership functions of its executives in proportion to their understanding that what is good for the patient is good for hospital administration.

Although all of us spend a great deal of time discussing the problems of hospital administration, the limitations of our services, the great expectations we nurture for the future—the fact of the matter is that the overall level of hospital management is good, and we all know that. Our hospitals, by and large, are well run.

We are developing a growing insight into the problems which have beset us these many years . . . and are becoming more and more alert to the needs which we have reason to believe will arise in the future. Among these, one of the most urgent is the need for broader outpatient services and to achieve this a shift in our own thinking to embrace the concept that a hospital serves the health needs of its community in all ways. Our main responsibility will always be bedside care, of course; but we must soon actively reject the practice of allocating beds and services to "vertical" patients whose needs can be met elsewhere in the hospital than in the nursing unit.

It behooves all of us to move forward to the goals we recognize as being desirable in terms of our increasing usefulness to society. There are many others of equal importance with those I have mentioned briefly today. And it is a source of encouragement to all of us to know that the combined enthusiasm and energies of education, business and government can propel us forward to the realization of the objectives which challenge us today.

Project Teaching

DALE R. COMAN

THE WORD *project* has two pronunciations, each with its own connotation. *Próject* is a noun implying a more or less clearly defined enterprise usually undertaken for a specified purpose. It is in this sense, of course, that I was given it as a subject. *Projéct* is a verb meaning to throw forward.

Project teaching in some areas of medical education may help to throw us forward or, at the very least, help us break the shackles that have bound us to some of the more sterile traditional methods of exciting the interest and curiosity of our students.

Project teaching may mean that a student selects a problem and is encouraged to carry it through to a solution on his own, as a research project, upon the basis of which he may submit a thesis. Or a group of students may participate, with or without an instructor to guide them.

Considered even more broadly, it may be interpreted as almost any attempt wherein the dynamic aspects of a subject are stressed by the nature of the teaching method, usually implying utilization of experimental methods. It is, indeed, to attain a concept of the dynamics of a phe-

nomenon that the project system is usually used.

From this point I shall restrict my remarks to the province of my own field. At least among nonpathologists I am looked upon as a pathologist. Among many pathologists, mention of my name may evoke remarks such as "sort of a shame, you know, he started out all right and then he strayed from the fold and now he wanders about among physiologists, biochemists, biophysicists and all those other lost souls who don't spend their lives looking through microscopes at formalin-fixed, hematoxylin and eosin-stained sections."

During the past week, my former disturbed misgivings concerning the future of the science of pathology have been rudely shocked into a realization that pathology is in a real and serious danger, due largely to the lack of vigorous, intelligent and enthusiastic young recruits. It is my belief that, unless the subject is presented in a more exciting way than it has been, we may reach a dangerous state of stagnation because of our failure to captivate the interest of eager young minds.

If pathology is looked upon by some as a dead subject, it is the pathologists who have made it so. A neoplasm has never arisen in a corpse; an abscess has never developed in a dead body. Diseases occur only in the living; they are not static

Dr. Coman is professor of experimental pathology, University of Pennsylvania School of Medicine. This article is adapted from a paper given at the first session of the 65th Annual Meeting of the AAMC at French Lick in October 1954. Dr. Coman was one of the participants in the Teaching Institute on Pathology, Microbiology, Immunology and Genetics held the previous week.

states on a microscopic slide or in a museum jar. They are dynamic events and the functional disturbances caused by them are as much a part of pathology as are the morphological changes accompanying them.

In the development of any science, taxonomy is a recognized necessity to make some order out of the chaotic myriads of material within the scope of the young science. From ornithology and botany to chemistry, physics and astronomy this has been true. But in pathology there has continued to prevail too often a contented complacency with the identification and classification of lesions as the end and aim of its existence. This may be all right so far as the *applied* pathology of a hospital is concerned, but as regards the *science* of pathology, it is highly improbable that any significant and fundamental advance in our knowledge of disease will result from the performance of another autopsy or another biopsy. Only through the application of the experimental method can our science progress—and this will depend upon the proper training of enthusiastic and good young brains.

When I talk with teachers of pathology many of them agree with me on these points. Why, then, do they continue to deprive their students of any contact with the methods upon which the future of their science rests? Why must they restrict the student's observations to dead static material? Pathology is taught and done in many places today as it *was* by its founding father, Rudolph Virchow, but not, I would wager, as a man of his intellect would do it today.

Having once more gotten this off my chest, I want to mention briefly one small effort that has been made to allow just one little puff of fresh air to wander timidly into the heavy

fumes of formaldehyde that are suffocating American pathology.

For the past ten years we have had a course in the dynamics of pathology at the University of Pennsylvania that occupies about 25 per cent of the laboratory hours of our second-year course. The entire class participates. This course was not designed to push back the frontiers of knowledge, nor were the experiments selected for this purpose. Instead, they can be compared to the self-performed student demonstrations in biochemistry, physiology and pharmacology.

Those students who have or who develop a greater interest in investigative work, perhaps as a career, are taken out of this course and into our own laboratories where we can pamper them to our heart's content, for herein lies the hope for the future of our science.

I shall not burden you with the detailed organization of this course—nor is its organization important. I have described the course in your journal—though I have no doubt that this comes as news to most of you.

I'm sure we are all agreed that the sort of physicians we hope to produce from our medical schools will have a broad and penetrating understanding of the dynamics of disease processes. Tuberculosis is not a cavity in a lung, nor is it a central zone of caseation necrosis surrounded by epithelioid and giant cells. It is a biological phenomenon of considerable variation resulting from the contact of living tissues with a viable organism. It is a continuous chain of events and its progress is reflected in functional disturbances affecting the entire organism. A neoplasm is not a lump, nor is it a cluster of artificially colored distorted caricatures of cells on a microscopic slide. It is one of the most exciting of biological

phenomena and is as dynamic a process as can be imagined.

Unless the young doctor can learn to view the autopsy, gross specimens and microscopic slides as representing one frame removed from a moving picture film, upon the basis of which he is to construct the entire plot and the roles of the various actors, even *morphology* has failed to serve him. If he cannot read still further into the picture and interpret the effects of the altered morphology upon the functions of the host, then *pathology* has failed to equip him with what he needs from that science. This physician will be dealing with living patients for these are the only kind in which, as I've stated before, pathologic events take origin and develop.

If the student is given an opportunity to watch things as they occur, he cannot escape realization of the morphological and functional fluidity that constitutes a disease process. I shall give here a very unsophisticated and simple example.

A rabbit's ear, constricted at its base, becomes cold and blue—passive congestion. Application of an irritant causes another ear to become bright red and hot—active hyperemia. Continued constriction causes an edematous swelling of the tissues. Collection of this edematous fluid and analysis of it reveals that there has been an escape of some, but not all, of the serum proteins due to increased capillary permeability. Injection of a dye intravenously results in localization of the dye in the irritated tissues, showing again the altered permeability of the capillaries. Examination of the mesentery of a frog will give us a closer look now at what is going on. Using the microscope, we see the blood rushing through the vessels. If we now injure one of these vessels, we can watch the formation of a

thrombus right there in the flowing blood and can later detach it and see it swept away as an embolus. We apply an irritant and observe the margination and emigration of the leukocytes.

Let's go on for a couple more steps. We collect some leukocytes, put them in plasma and, with the microscope, follow the direction of their movements as affected by different substances and bacteria, demonstrating the phenomenon of chemotaxis that brings the leukocyte into contact with the invading organism. And then we place leukocytes and bacteria together and observe phagocytosis. Here also we can use serum from an immune and demonstrate the increase in phagocytosis that results; incidentally providing one of the few occasions for the student to use the biostatistics that you, as deans, insisted he be taught in his first year, but which thereafter you allow to undergo a rapid atrophy of disuse.

Here, with a few almost childlessly simple self-performed demonstrations, you have allowed the student to see enacted before his eyes what you struggle so hard to convey to him with words and dead static preparations—from passive and active hyperemia, thrombosis and embolism, to the inception of inflammation and the role of bodily defense mechanisms.

I shall not belabor you with more examples. I hope you have some grasp of what I'm driving at. If you haven't perhaps it's because you were taught pathology in a rather different way.

I would have you carry away from here the realization that pathology is a science upon which a sound knowledge of diseases must rest. I would have you realize also that progress in our knowledge of disease must come from the application of the ex-

perimental method in pathology and I would hope that you might even make some attempt to help open some windows to admit a few more little puffs of fresh air into the more odorous crannies of your buildings.

I have been rather rough on some of my colleagues and contemporary pathologists today (did I hear someone say "today only"), but it is without malice. Elsewhere throughout the country clean little puffs of air are coming in and I like to think that a few more may have taken origin in the course of our deliberations this past week. I hope they become more numerous and ever more vigorous. It always seems that with the introduction of new concepts, new methods, new anything, in order to shift the center of the scene just a little bit, it usually devolves at first upon a few who are willing to shove and push from way out in left field and who are willing to hurt a bit and be hurt in return in order to accomplish comparatively little over a painfully long time. And, therefore, I cannot apologize to those contemporaries in pathology, for they would with justification label me as a hypocrite if I did.

It is of the utmost importance to the whole field of medicine that a vigorous and productive science of pathology shall thrive and flourish. This can occur only in the academic departments of your medical schools. It is up to you, as deans, to foster and to encourage it within your own institutions whenever an opportunity arrives for you to do so.

The engineers of pathology, those who apply it in the diagnostic services of your hospitals, are doing an excellent job so far as I know. I have no direct knowledge in this regard because our department is a truly academic one, with no routine service connections. My fear for pathology concerns the science itself and its future. A higher salary scale is not the whole answer to solving the recruitment problem. Unless we can excite eager young minds into our science, it will not prosper. I believe these minds can be excited by our science. It is not the *method* of teaching that is important, it is the *philosophy behind the method* that is of significance. Utilization of more stimulating methods, however, may help in attaining a more vigorous expression of that philosophy.

An Adventure in Teaching

Obstetrical Pathology

PEARL M. ZEEK

DURING the last six years, at the Cincinnati General hospital, the often neglected field of obstetrical pathology was explored and a new course in that subject was added to the third year electives in the curriculum of the college of medicine of the University of Cincinnati.

The author's interest in this subject was initiated when placentas were submitted for pathological examination from several patients with chronic hypertension, who had developed pre-eclampsia during pregnancy. In one case of maternal death autopsy material was also examined. In attempting to interpret certain findings in these cases the author became aware of the dearth of published data on the histopathology of placentas and pregnant uteri, particularly in relation to clinical manifestations of disease in mothers and infants. Therefore, during the subsequent six years, more than a thousand placentas and pregnant uteri have been dissected and studied microscopically. This study was made possible through the valuable cooperation of the resident and attending staffs of the department of obstetrics of the Cincinnati

General hospital.

The specimens were labelled and placed in formalin promptly after delivery. They do not represent consecutive cases. They include 50 normal term deliveries, as controls, most of the cases of hypertensive toxemia delivered during this period and many cases of stillbirth and neonatal death. In addition, placentas were obtained from cases presenting a wide variety of other disease conditions and complications of pregnancy. Moreover, specimens, often from rare cases, were contributed by pathologists and obstetricians from other hospitals in the greater Cincinnati area.

After fixation and dissection (and in many cases kodachrome photography, sections for microscopic study were taken from each end of the umbilical cord, from both the fetal and the maternal aspects of the placenta, and from the fetal membranes with the attached *decidua vera*. These five microscopic sections were considered the minimum for an adequate examination of a placenta. Other sections were taken from the various lesions present. Following further fixation in fresh buffered formalin the sections of membranes were rolled up, tied with a thread, and after embedding

Until June 30, 1955, Dr. Zeek was associate professor in the department of pathology, University of Cincinnati and the Cincinnati General hospital. She is currently completing a book on obstetrical pathology.

in paraffin were cut in jelly-roll fashion in order to obtain as large an expanse of membranes and decidua vera as possible on the microscopic slides.

After completing the pathological study of a case the clinical record was abstracted and attempts were made to correlate the clinical and pathological findings. In many cases additional pathological material was available from infant autopsies, hysterectomies and, in a few cases, from maternal autopsies. Moreover, in certain types of cases, particularly in diabetics and in hypertensive toxemic patients, placentas were obtained from successive pregnancies during the six-year period. These proved to be of special interest. To supplement the current material the protocols and microscopic sections were studied in all cases of death during pregnancy, with autopsy, at the Cincinnati General hospital since 1921.

As knowledge accumulated from the study of this material interdepartmental conferences became frequent. A monthly fetal mortality conference was organized through the joint efforts of a group of obstetricians, pediatricians and pathologists, the purpose being to learn more about the causes of stillbirth and neonatal deaths. Information was pooled from the three or more services on which certain cases had been studied. Further use of the pathological material attended the giving of 12 informal lectures and demonstrations, at evening sessions, to interested members of the resident staff of the Cincinnati General hospital. By these means a large group of gross specimens, kodachrome photographs and microscopic slides were assembled from placentas and pregnant uteri that contained lesions of clinical significance.

Course Begins

In 1951, when the medical college of the University of Cincinnati instituted the plan whereby medical students would have one quarter (9 weeks) of elective courses during their junior year, a course in obstetrical pathology was offered. It was listed as follows: "Obstetrical pathology, quarters 1,2,3,4. Mondays 2-4 p.m. Limited to 5-20 students. Lectures and demonstrations of pathological material related to disorders encountered during pregnancy and delivery."

Since only a fourth of the class of 88 students would be taking electives each quarter, and since the only available room was very small, the size of the class was limited to a maximum of 20 students. There was no thought that so many would be interested. On the contrary, a minimum was set at five students because the task of assembling the needed specimens, slides, chairs and other paraphernalia each week was considered too great for a lesser number of students.

During the first year the students who chose the course numbered 11, 11, 15 and 14 in successive quarters. During the following year, 1952-53, the time of a much desired course in radiology was changed to conflict with that of obstetrical pathology. Nevertheless, 44 students chose the latter during the year, and at mid-year a group of students petitioned the instructors to resolve the conflict in order that more of them might take both courses. That was done, and during the third year the students who chose obstetrical pathology numbered 16, 12, 20 and 20 during successive quarters. Throughout the 12 quarters during which the course was taught the entirely voluntary attendance was excellent. The roll was seldom called because a quick count of

the students usually revealed everyone present. The interest manifested by the medical students in this course has been very gratifying. Moreover, the attending and resident obstetricians at the Cincinnati General hospital have provided continuous encouragement and cooperation without which this project would have been impossible.

The subject matter of the course is given in the outline below. The diseases covered were essentially those peculiar to pregnancy. No attempt was made to cover diseases that may be complicated by pregnancy, these being taught elsewhere in the medical school curriculum, although a few of them were occasionally mentioned in relation to their effects upon pregnancy and delivery.

Numerous kodachromes, lantern slides, microscopic sections and gross specimens were used to illustrate the subject matter of the course. The usual procedure during each two hour session was first, a 50-minute presentation of the subject for the day, often aided by an outline on a small portable blackboard, or by a few kodachrome slides. About 20 minutes were devoted to questions, discussion and a brief recess, following which microscopic sections and kodachromes or gross specimens were demonstrated. A portion of the last session each quarter was reserved for a multiple choice type of examination.

Descriptions, photographs and drawings of the gross and microscopic lesions in the series of 1000 cases, upon which this course was built, are being presented in various publications. A collection of illustrations was made by Netter,¹ using some of our specimens as models. These, with script by Assali and Zeek, constitute Chapter XII, "Pregnancy and Its Diseases," in Volume Two of the Ciba Collection of Medical Illustrations.

The part on "Toxemia of Pregnancy" has also been published by Ciba in a separate symposium.² Two reports on other subjects covered in the course have been published in medical journals,^{3,4} and others are in preparation. Finally, the entire subject matter of the course, with numerous illustrations, is being assembled for publication in a small textbook on obstetrical pathology.

Summary

The gross and microscopic pathology of placentas and gravid uteri from 1000 cases of pregnancy were studied in relation to their possible clinical significances. An elective course in obstetrical pathology was offered to the third year medical students in the college of medicine of the University of Cincinnati, during each of the four quarters of three recent school years. An outline of the subject matter of the course is included in the present report. Numerous gross specimens, kodachrome photographs and microscopic sections were used to illustrate the various subjects taught.

COURSE OUTLINE

- Session I. A. Purpose of the course: to describe and demonstrate the morphological basis of disease conditions peculiar to pregnancy, with special emphasis upon lesions in the placenta and uterus.
- B. Brief review of the physiology and the histological changes associated with the various phases of the menstrual cycle, and their relation to ovulation, migration of the ovum, nidation and placentation. (Illustrated with outlines, drawings and kodachrome photographs).
- C. The gross and microscopic anatomy of a normal placenta at various stages of gestation.
- D. Functions of the placenta.
- E. Demonstration: placentas and embryos, various stages of gestation, some still in utero.
- Session II. Retracing of the migration of the ovum, formation of the blastocyst, nidation and implantation, with the presentation of

the various abnormalities that may be encountered, and their resultant clinical conditions. (Clinical symptomatology and treatment not discussed, but occasionally mentioned for purposes of correlation and emphasis).

- A. Abnormalities in the formation of the blastocyst: congenital and hereditary anomalies in the embryo and placenta. Early death of the embryo and early abortion: possible causes, various theories. Sequellae, including changes in the placenta associated with retention of a dead fetus in utero.
 - B. Abnormalities of nidation: ectopic pregnancy; placenta previa; vasa previa. Varieties, possible causes and sequellae of each.
 - C. Abnormalities of placentation: placenta accreta, increta and percreta.
 - D. Demonstration of specimens and slides.
- Session III. A. Abnormalities in the development of the placenta. Comparison with the normal: size, shape, number, weight, color and consistence. Terminology: bilobate, circumvallate, battledore, spuria, fenestrata, succenturiata, membrancea, etc. Placentas of multiple pregnancy: homozygous and heterozygous twins, triplets, etc.
- B. The umbilical cord, fetal membranes and amniotic fluid. Characteristics of the normal and the various deviations therefrom. Oligohydramnios; polyhydramnios; amnion nodosum. Theories regarding the causes and effects. Related fetal congenital anomalies.
 - C. Demonstrations.
- Session IV. A. The circulation in the placenta: various concepts presented. The author's concept demonstrated in slides and specimen.
- B. Disturbances in the circulation of the placenta: fetal; maternal. Causes and effects. Meaning of "true infarcts" in the placenta.
 - C. Various stages in the development and regression of true infarcts of the placenta. Differential diagnosis from other nodular lesions.
 - D. Demonstration of nodular lesions in placentas. Kodachromes, drawings, gross specimens and microscopic slides.
- Session V. Eclampsyogenic toxemia of pregnancy (acute toxemia). Definition. Classification of the hypertensive toxemias. Some characteristics of the hypertension of pre-eclampsia.
- A. Extra-uterine lesions of eclampsyogenic toxemia. Their inconstancy. Gross and microscopic morphology. Relation to widespread vasoconstriction.
 - B. Intra-uterine lesions associated with eclampsyogenic toxemia. Intra-uterine ischemia concept. Possible role of placental infarcts. Brief review of experimental work in this field.

C. Summary, by means of diagram, of the known facts and the unknown aspects of eclampsyogenic toxemia.

Session VI. A. Placenta abruptio. Contrast with placenta previa. Relation to toxemia. Relation to Couvelaire uterus. Relation to placental infarcts.

B. Neoplasms of the placenta.

1. Hydatidiform mole. Morphology, physiology, relation to toxemia and to choriocarcinoma.
2. Choriocarcinoma.
3. Chorioangioma.

C. Demonstrations.

Session VII. A. Inflammatory and infectious lesions in the placenta and gravid uterus. Prenatal; intrapartem; puerperal.

Terms: endometritis, deciduitis, chorionitis, amnionitis, umbilical angitis, umbilical cellulitis. Pathogenesis and morphology of lesions; sequellae in the mother and infant.

B. Brief consideration of intra-uterine causes of fetal hypoxia and anoxia and their relation to neonatal morbidity and mortality and to stillbirth.

Session VIII. A. Abortions. Definition. Classification. Pathogenesis at various stages of gestation. Complications. Medico-legal aspects. Terminology: Breus's mole; carneous mole; lithopedion, etc.

B. Ruptured uterus. Varieties and causes at various periods of gestation. Sequellae.

C. Brief consideration of the morphology of Caesarian section.

D. Demonstrations.

Session IX. A. Erythroblastosis fetalis.

B. Pulmonary embolism related to pregnancy: trophoblastic; thrombotic; particulate matter of the amniotic fluid. Sequellae of each.

C. Mastitis.

D. Phlebitis of pregnancy and the puerperium.

E. Hydronephrosis of pregnancy. Possible sequellae.

"Multiple choice" examination.

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1. NETTER, F. H.: "The Ciba Collection of Medical Illustrations," Volume 2. Reproduction System. Chapter XII. Pregnancy and Its Diseases. Ciba Pharmaceutical Products, Inc., 1954.
2. ASSALI, N. S.: "Toxemia of Pregnancy," The Ciba Clinical Symposia 6: 3-34, 1954.
3. ZEEK, P. M. and ASSALI, N. S.: "Vascular changes in the decidua associated with eclampsyogenic toxemia of pregnancy," *Am. J. Clin. Path.* 20: 1099-1109.
4. ZEEK, P. M. and ASSALI, N. S.: "The formation and differential diagnosis of true infarcts of the placenta, *Am. J. Obs. and Gyn.* 64: 1191-1200, 1952.



66th
Annual Meeting
of the
Association of
American Medical Colleges

New Ocean House
Swampscott, Massachusetts
October 24, 25, 26, 1955

Officers of the Association and Members of the Executive Council

1954-55

- President and Chairman of Executive Council:* VERNON W. LIPPARD, M.D.....Dean,
Yale University School of Medicine
- President-Elect:* ROBERT A. MOORE, M.D.....Vice Chancellor, University of Pittsburgh
Schools of the Health Professions
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- STOCKTON KIMBALL, M.D...Dean, University of Buffalo School of Medicine—1955
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- WALTER R. BERRYHILL, M.D.....Dean, University of North Carolina
School of Medicine—1956
- LOWELL T. COGGESHALL, M.D.....Dean, Division Biological Sciences
University of Chicago—1957
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Information

Hotel

Requests for hotel arrangements should be made directly to the New Ocean House, Swampscott, Mass. American Plan rates are \$12 to \$14 a day in single rooms; \$10.75 to \$13.75 a day in double rooms. Special arrangements have been made for covering all dining room gratuities by the addition of \$1 a day to the final bill.

Transportation

Guests arriving by train at the South Station, Boston, may change by taxi to the North Station (about 5 minutes). Trains leave the North Station for Swampscott on an average of two to three an hour throughout the day (except Sundays) and once or twice an hour during the evening hours. The running time by train from the North Station to Swampscott is approximately 25 minutes. There is a 24-hour taxi service at the Swampscott Station, distance—one mile—charge 50c.

If guests arriving at the South Station, Boston, wish to have the hotel send an automobile to meet them, the hotel is prepared to furnish this service. This will avoid the necessity of changing stations in Boston and will enable guests to reach the New Ocean House in about 30 minutes. Charge for an automobile from the South Station or the North Station, Boston, to New Ocean House is \$6.50 for one to five passengers.

The Logan International Airport is located about 20 minutes' ride by automobile from the New Ocean House. Upon request, the hotel will arrange to send a car to meet members at the airport. Charge is \$5 for one to five passengers.

Guests desirous of having automobiles meet them, either at the South or North Stations, Boston, or the Logan International Airport, are requested to notify the hotel direct, giving the time of arrival. Acknowledgement will be made by the hotel management, indicating the registration number of the car and the point at which the automobile will be parked at the Station or the Airport.

Registration

Registration will begin Sunday, October 23, at 9 a.m. in the lobby and will continue through Wednesday, October 26, until 12 noon. There is no charge for registration and all persons attending any of the meetings should register.

Women's Activities

An informal program of activities has been arranged for the women and they are urged to consult with Miss Allyn at the registration desk concerning the details. Short tours to historic spots can be easily arranged.

Pre-Conference Meetings

Sunday, October 23, has been specially reserved for meetings of the various standing committees of the Association, as called by their chairmen. No public meetings have been scheduled for that day.

Annual Reports of Standing Committees

Mimeographed copies of the annual reports of the Association's standing committees will be provided each person as he registers. Each is asked to bring such of these reports as he will need in attending the open hearings on these reports Monday, October 24, at 4 p.m.

Monday, October 24, 1955

9:00 A.M. INTRODUCTION OF NEW DEANS—BALL ROOM

Announcements

9:30 A.M. PRESIDENTIAL ADDRESS—VERNON W. LIPPARD

10:00 A.M. REFLECTIONS FROM THE TEACHING INSTITUTE ON ANATOMY AND ANTHROPOLOGY

- a) "The Association's Program of Teaching Institutes" George Packer Berry (Harvard Medical School), Chairman of Committee on Teaching Institutes and Special Studies
- b) "Planning the Anatomy and Anthropology Teaching Institute," William U. Gardner (Yale University School of Medicine)—Chairman of Planning Committee
- c) "The Role of Anatomy in Medical Education," Normand L. Hoerr (Western Reserve University School of Medicine)—Chairman of Subcommittee on the Role of the Anatomical Disciplines in Medical Education
- d) "The Influences of Advances in Medical Sciences on Anatomical Teaching," Arnold Lazarow (University of Minnesota School of Medicine)—Member of Subcommittee on Instruction and Learning in Anatomy
- e) "Anthropology in Medical Education," Gabriel W. Lasker (Wayne University College of Medicine)—Chairman of Subcommittee on Anthropology and Medical Education
- f) "The Recruitment and Training of Teachers of Anatomy," Sam L. Clark (Vanderbilt University School of Medicine)—Chairman of Subcommittee on the Recruitment and Education of Teachers of Anatomy

12:00 noon LUNCH—DINING ROOM

2:00 P.M. REPORTS ON EXPERIMENTS IN MEDICAL EDUCATION

- a) Studies in the Sociology of Medical Education: Work in Progress. Robert K. Merton (Dept. of Sociology, Columbia University) and Samuel Bloom (School of Medicine, University of Pennsylvania)
- b) Some Problems in Teaching Comprehensive Medicine. George G. Reader (Cornell University Medical College)
- c) The General Medical Clinic: An Experiment in Clerkship Teaching. Francis R. Manlove (University of Colorado School of Medicine)
- d) A New Orientation for Instruction in Pediatrics, Milton J. E. Senn (Yale University School of Medicine)

4:00 P.M. OPEN HEARINGS ON ANNUAL REPORTS OF COMMITTEES

- a) Audiovisual Education—Walter A. Bloedorn
- b) Continuation Education—Norman B. Nelson
- c) Financing Medical Education—Joseph C. Hinsey
- d) International Relations in Medical Education—Richard H. Young
- e) Internships, Residencies and Graduate Medical Education—Currier McEwen
- f) Licensure Problems—Charles A. Doan
- g) Medical Care Plans—Dean A. Clark
- h) Planning for National Emergency—Stanley W. Olson
- i) Public Information—John L. Caughey
- j) Teaching Institutes and Special Studies—George Packer Berry
- k) Veterans Administration, Medical School Relationships—Joseph Hayman

7:00 P.M. ANNUAL DINNER OF THE ASSOCIATION

- a) Nomination for the Borden Award in the Medical Sciences for 1955—William S. Tillett, Chairman of the Committee on the Borden Award
- b) Presentation of Borden Award—John H. McCain, Secretary of the Borden Company Foundation, Inc.
- c) Address—"Trends in Medical Education in Great Britain"—J. Dixon Boyd, Professor of Anatomy, Cambridge University, England

Tuesday, October 25, 1955

9:00 A.M. BUSINESS MEETING—BALL ROOM

Roll Call

Approval of Minutes of 65th Annual Meeting

Voting in of new Individual Members

Report of Chairman of Executive Council—
Vernon W. Lippard

Report of Secretary and Editor—Dean F. Smiley

Report of Treasurer—John B. Youmans

Report of Director of Research—Helen Gee

Report of Director of Medical Audio-Visual Institute—
J. Edwin Foster

Annual Reports of Committees

Confirmation of Time and Place of 67th Annual Meeting

Presentation of Resolutions

Report of Nominating Committee

12:00 noon LUNCH—DINING ROOM

2:00 P.M. REPORTS ON EXPERIMENTS IN MEDICAL EDUCATION

- a) The Development of an Experiment in Medical Education—Joseph T. Wearn and T. Hale Ham (Western Reserve University School of Medicine)
- b) Interdepartmental and Departmental Teaching of Medicine and the Biologic Sciences in Four Years—John W. Patterson (Western Reserve University School of Medicine)
- c) Clinical Teaching During Four Years—John L. Caughey (Western Reserve University School of Medicine)
- d) Preceptors as General Educators in Medicine—W. Clarke Wescoe (University of Kansas School of Medicine)
- e) Medical Education and the Distribution of Physicians—John B. Truslow (Medical College of Virginia)

7:00 P.M. DINNER—DINING ROOM

9:00 P.M. FILM PROGRAM (*General Interest*)

FILM PROGRAM (*Medical Teaching*)

MEETING OF 1955-56 EXECUTIVE COUNCIL

Wednesday, October 26, 1955

9:00 A.M. SYMPOSIUM ON COMPENSATION OF FACULTIES OF CLINICAL DEPARTMENTS

The Full-time Plan at the University of Chicago—
Lowell T. Coggeshall

The Private Diagnostic Clinic at Duke University—
Wilburt C. Davison

The University of Virginia Plan—Thomas H. Hunter

The University of Iowa Plan—Norman B. Nelson

The Harvard University Plan—George Packer Berry

11:30 A.M. INSTALLATION OF NEW OFFICERS

Editorials and Comments

Solution Needed for Foreign Physician Problem

WHEN THE medical schools of this country revolutionized their organization and curriculum at the time of the Flexner study (1910) they patterned their teaching program on the best that Europe had to offer at the time. In spite of the handicapping effects of three wars, progress in our American medical schools has been such that by 1946 the United States found itself the mecca for students from all over the world seeking advanced medical training. A study made by the Institute of International Education with the cooperation of the American Medical Association showed that in the year 1954-55 the number of nonimmigrant foreign physicians who were in this country for hospital internship-residency training was 5,036¹. They came from 83 different countries.

This is a wonderful accomplishment and the United States is fortunate indeed to be in position to make such a contribution to world medicine.

There are, however, serious problems related to this influx of foreign trained physicians, which must be satisfactorily solved before we can accept it as a sound development.

The present situation is in many respects very different from the days when our American students flocked to Vienna, London and Edinburgh for advanced medical training. Our students did not receive internship and residency appointments with salaries in the foreign hospitals. Our students did not expect to assume responsibility for the diagnosis and treatment of hospital and clinic patients without first having taken and passed the local licensing examinations. Today, however, foreign physicians trained in a wide variety of medical schools in 83 countries are permitted to practice as interns and residents in the hospitals of the majority of our states without the necessity of a licensing examination and without any real evaluation of their previous medical training. To those of us who know how completely theoretical the medical training can be in some foreign schools, who register several hundred students in each class and teach almost entirely by the use of the lecture method, this lack of evaluation constitutes a serious threat to the safety and well-being of the hospital patients upon whom these foreign graduates are permitted to practice. *Some effective examination system to determine the professional competence of physicians trained in schools not under the visitation surveillance of the Association of American Medical Colleges and the Council on Medical Education and Hospitals of the American Medical Association, is urgently needed.* No foreign trained physician should be permitted to come to this country to accept a position as intern or resident in a hospital until he has first demonstrated a satisfactory command of the English language, an acceptable knowledge of the basic medical sciences, and the command of the common skills expected of every doctor of medicine.

A second problem created by this influx of foreign trained physicians is that far too many of them instead of returning home after completion of their advanced training, decide to seek licensure and remain here. They of course have the right to do this but the United States is certainly making a very poor contribution to world medicine if it keeps large numbers of those foreign physicians who after completion of advanced training were expected to return home, enter into active practice and put their advanced training to the use of their own countrymen.

A third, somewhat different problem but one equally important, is that of the immigrant physician. Though accurate figures are not available, figures provided by the United States Immigration Bureau indicate that since 1933 over 16,000 alien physician immigrants have entered this country². From state board of medical examiners' figures it would appear that since 1933 over 10,000 of these alien physicians have taken and passed various state licensing examinations and acquired the right to practice in this country. The peak of this immigration of physicians apparently was reached in 1950 when 1,848 immigrant physicians entered this country. With the expiration of the Displaced Physician Act, in 1952, the total of such immigrant physicians dropped to 845 in 1953³.

In the ordinary course of events the immigrant physician applies to a state medical examining board asking permission to take the state medical licensing examination. In 10 of our states no foreign trained physician is admitted to licensing examination. In our other states, however, foreign trained physicians are admitted to examination provided they meet a variety of requirements including citizenship (or filing for citizenship papers), possession of a Basic Science Certificate, completion of an internship in the United States, etcetera. Possession of a medical diploma from a foreign medical school approved by the state medical examining board is a basic requirement in most of the states. And it is at this point that the greatest difficulty arises since no system for accurate evaluation and approval of foreign medical schools is in existence. Some state boards of medical examiners approve, for example, the Italian schools, others do not; some approve certain of the schools of Southern Ireland and others do not. The approval of foreign schools is so varied that no single pattern can be described as common to all of the states.

The list of foreign medical schools whose graduates were recommended for consideration on the same basis as graduates of American medical schools (Council on Medical Education and Hospitals of the AMA and Association of American Medical Colleges, 1950-53) was so limited in scope and so fragmentary as to be of very little real value.

State licensing examinations as generally set up in this country are primarily designed to test the professional competence of physicians who are certified graduates of the United States and Canada's 93 medical schools which are being visited recurrently and evaluated by teams of medical educators representing the Association of American Medical Colleges and the Council on Medical Education and Hospitals of the American Medical Association. The graduates so examined were carefully screened through a highly selective admissions system before they were admitted to medical school. They were taught in comparatively small classes. They carry the stamp of approval of a school which is itself approved only if it continues to provide an acceptable teaching program

and consistently enforces high standards of accomplishment for the students. To depend upon this same examination to determine the professional competence of physicians who may well have been accepted almost upon application for admission to a medical class of 500 to 1,000 persons, and who may have received their total instruction in large groups under the lecture system, is certainly not sound, and a state medical examining board that follows that pattern is obviously failing in its duty to protect the public from poorly trained physicians.

A fourth problem which must be recognized is the American student who, having failed to gain admission to an American medical school, enters and graduates from a foreign medical school and then returns to the United States with the expectation of obtaining licensure and the right to practice.

It would appear that there is urgent need (a) that the state legislatures of the country recognize the inability of their medical examining boards to classify foreign medical schools as approved or disapproved and substitute the passing of a special screening examination including practical tests in clinical subjects for graduation from an approved medical school, for all foreign physicians seeking licensure, (the various state medical examining boards might well follow the precedent established by the State of Michigan³ in utilizing the faculty members of local medical colleges in setting up and administering such screening examinations) (b) that only those graduates of foreign medical schools who pass the screening examination be admitted to the regular state medical licensure examinations.

In our desire to play our traditional role as a refuge for the oppressed and in our enthusiasm for contributing to world medicine, we must not allow ourselves to forget that our state boards of medical examiners have a very real responsibility to safeguard the welfare of and guarantee the quality of the medical service provided the public and particularly the patients in our hospitals.

Since September 11, 1954, a Cooperating Committee on Graduates of Foreign Medical Schools, consisting of representatives of the AMA's Council on Medical Education and Hospitals, the Association of American Medical Colleges, the Federation of State Medical Boards of the United States and the American Hospital Association have been laboring with these problems. It is certainly to be hoped that solutions will be forthcoming that will be both speedily applicable and practical.—D.F.S.

1. JAMES E. McCORMACK, M.D. and ARTHUR FERARU, D. en D. de L. U. (Lyons) "Alien Interns and Residents in the United States." *J.A.M.A.* Vol. 158, No. 15, p. 1357, August 13, 1955.

2. Figures made available but not published by Walter S. Wiggins, M.D., Associate Secretary, Council on Medical Education and Hospitals, American Medical Association, 535 North Dearborn St., Chicago 10, Ill.

3. WAYNE L. WHITAKER, "Evaluation of the Foreign Trained Physician," *J. Med. Educ.*, Vol. 29, No. 11, November 1954.

Preventive Medicine in India

During a recent trip to India, the Chairman of the Editorial Board received the following description of an interesting program developed

by the department of preventive medicine, Christian Medical College, Ludhiana, Punjab. Dr. Carl E. Taylor is head of the department.

Field Work and Village Program: Indian medical students particularly need opportunities for intimate association with village people to develop an understanding of rural life and culture. Medical students are usually from cities, their education is in cities; it is only natural, therefore, that their only interest in medical practice should be in the more lucrative urban setting where they can have social contacts for themselves and educational facilities for their children. It is generally admitted that the health needs of village people represent the greatest challenge to the medical profession of India. Until medical students know something about village conditions it is improbable that they will be willing to make the sacrifice required. Contact with villages will show our future doctors not only the challenges but also the many pleasant features of life in rural areas.

A major objective of our village health program is to provide situations in which medical students can learn to know village life. We have found that a useful mechanism is the use of village surveys. The first of a series of general health surveys in our health center villages has been completed and a brief description will bring out the values of the method.

Jamalpur is a village of about 1200 people. We prepared the village people for the survey by: (1) establishing contact through the panchayat and making them feel that our program was their program; (2) doing dispensary work on biweekly or weekly visits to establish rapport with the people; (3) preparing our survey forms in consultation with the panchayat and letting them suggest revisions in the questions; (4) mapping the village and preparing a household list; (5) calling a mass meeting through the panchayat to explain in detail to the heads of the families what we were trying to do, that our purpose was to define the health problems of the village so as to help them meet those which were most important and (6) arranging for a panchayat member to accompany each team during the survey to ensure cooperation and accurate responses.

The medical students were prepared for the survey by: (1) preparing a household survey form containing easily answered questions under the headings of sanitation and housing, socio-economic status, nutrition, attitude survey and census data. This was the particular responsibility of first year students. In addition, we had individual medical records for each person listed on the household form which were filled in by senior medical students; (2) arranging for the entire first year class and the entire fifth year class to be free every morning for one week. We also recruited approximately 15 interested staff members to serve as team leaders; (3) dividing the more than 100 investigators into five teams and these into multiple squads to carry out various functions, men students doing housing and sanitation, while women did nutritional questioning, etc. and (4) briefing sessions prior to the survey covering surveying techniques and methods of getting information from the people. Each morning we started with additional briefing sessions covering points raised in the previous day's experience.

The students were tremendously enthusiastic and the village folk most cooperative. A student who had been brought up in a Punjab village said

that he had learned a great deal about village life because he had never thought to ask for the sort of information which was brought out. There were no families which failed to cooperate in giving information. The data which were collected are being tabulated and analyzed statistically. In their biostatistics course the first year class received for their practical work some of the raw data which they had themselves collected; for example, they calculated standard deviations on columns of nutritional data.

A similar attempt to bring together field and classroom work is the plan to arrange for students studying clinical pathology to go to the village to collect specimens of blood and stools from population samples such as school children. These specimens will then be taken to the laboratory for examination. Any positive finding would immediately mean more to the student because he would be seeing not only hookworm ova in a stool, but hookworm ova from a child he had seen living in an environment he had seen.

On the basis of these surveys specific projects are being selected which need particular attention in each village. In Jamalpur general sanitation is being stressed and the village panchayat is now planning a program of paving streets, putting in drains and improving wells; latrines are to come later.

Research: The life of any department is evidenced by its research efforts. Selected students are being encouraged to participate in investigative activities. The best training for research is the struggling experimentation of students in these formative years. The village health work is organized to include a series of controlled experiments in which students can actively participate. In each village the general health pattern is to be defined by preliminary surveys to provide a baseline for further studies. The epidemiological features of various disease conditions will be followed. The effects of introduction of preventive measures against one group of diseases will be traced in some villages while in other villages the results of measures against other conditions will be observed. Each student in making his contribution to the larger program will gain appreciation for the teamwork necessary in conducting modern research.

One medical student has been working during his summer vacation on a research problem on fly breeding. It seems logical to undertake the important job of fly control with the species sanitation approach which has proved so fruitful in malaria control. In order to find out which flies are the important disease vectors in this area this study is being directed to identification of adult flies and larvae collected in varying places and conditions. When we know the breeding places of flies which go to food we will know where to concentrate our clean-up program.

Hygiene Museum: Government regulations require a hygiene museum to demonstrate by means of models sanitary devices used in various parts of the country and world. A disproportionate amount of money and energy is often devoted to building up these museums. Sometimes the models shown are of sanitary facilities which cannot be found in India. Because they look nice there is too much stress on complicated devices and not enough attention to the simple sanitary latrines and improved wells needed for village conditions.

It is proposed therefore to put minimum effort into developing a museum of models and to emphasize the development of one that is full

scale and can be used. In one of our health center villages several houses will be constructed using simple building materials available to villagers but incorporating better housing principles of lighting, ventilation and cleanliness. Sanitary latrines, wells, soakage pits and drainage systems will be designed according to modern scientific concepts. Each installation will be different in order to test various designs through practical use. Experimentation in designing and modifying existing facilities will be urged on the part of everyone connected with the health program. These village style houses will be used for housing health workers stationed in that village and other personnel during periods of field training.

—Carl E. Taylor

Our Readers Write

Dear Editor:

I thought that possibly the letter we send certain students who apply for admission and are rejected, might be of interest to some of your readers. I therefore append this copy.

"Mr. John Jones
College
City, State

Dear Mr. Jones:

We regret that the limited number of places in the first year class makes it impossible for the University of Vermont College of Medicine to accept you as a student. Your interest in the medical field and the fact that as a student you stand above the general college average make us hope that in the event you do not enter a medical school you may be interested in some of the fields related to medical work.

The need for trained personnel in these allied fields is great, and the role they play in public health is a large one. The physician is only one member of the health team which includes hospital administrators, health engineers, laboratory directors and technicians, occupational therapists and social workers in medical, psychiatric and clinical areas.

We have enclosed a list of some of the agencies to which you may wish to address further inquiries. This office and your college advisor will be glad to discuss these opportunities with you." Dr. George A. Wolf Jr.,
Dean, University of Vermont College of Medicine.

Dear Editor:

The American Physiological Society, at its fall 1954 meeting at Madison, Wis., experimented with a program feature to assist teachers of physiology. This is a brief report upon the background, objectives, execution, achievements and shortcomings of this feature.

Everyone agrees that it has become very difficult indeed for a teacher of physiology to acquire all of the knowledge and insight needed to present every aspect of this broad subject to students. A textbook is

usually several years out of date at the time of its publication and therefore cannot help the teacher to keep abreast of important new developments in physiology. A review article is of great value to the teacher if the specific subject has been reviewed in recent years, if the article has been written for the "general practitioner" of physiology rather than for the specialist, and if the article is more than an annotated bibliography. The current physiological literature (original investigative work) is usually written for the specialist and is perplexing to an expert in another field.

The problem of "how to keep up to date" was discussed at the AAMC's First Teaching Institute (Physiology, Biochemistry and Pharmacology). There, attention was called to the one to two day "refresher" courses which have been organized by many clinical groups (pediatricians, radiologists, ophthalmologists, etc.) in conjunction with their annual meetings; these courses, given by experts in a special field, have proven to be useful in giving busy clinicians a broad and accurate view of the whole specialty. It was suggested that teachers in the biological sciences (whose research is in a restricted field but whose knowledge must be broad for teaching purposes) might develop similar courses to assist each other.

The newly formed Committee on Educational Matters of the American Physiological Society organized and presented an experimental program of this type in order to determine, by audience reaction, whether such courses should become a regular part of future programs of the society. The field of "Pulmonary Physiology" was selected for the trial course, because text books and review articles have not been able to keep pace with the very rapid increase in knowledge in this subject. The course was arranged for the two days preceding the September meeting of the American Physiological Society. All teachers of physiology were invited to attend through the regular announcements of the fall meeting. There was no tuition or registration fee. The local committee at Madison arranged for meeting places, rooms in the University of Wisconsin dormitories and meals in the student cafeteria.

The faculty consisted of Dr. J. H. Comroe Jr., department of physiology, Graduate School of Medicine, University of Pennsylvania; Dr. Hermann Rahn and Dr. Wallace O. Fenn, department of physiology, University of Rochester; Dr. Ward S. Fowler, department of physiology, Mayo Clinic, and Dr. Jere Mead, department of physiology, Harvard School of Public Health. Emphasis was placed on presentation of important new physiological concepts not yet described in texts, and clarification of complex aspects which are essential to a thorough understanding of the subject. Whenever possible, mention was made of material which might be included in the student's laboratory experience. The course was directed toward teachers whose primary interest was not in *pulmonary* physiology. In general a lecture period of one and one-half or two hours was followed by a discussion period of one hour. The four main topics presented were alveolar ventilation, relationship between alveolar ventilation and pulmonary capillary blood flow, diffusion across the alveolar-capillary membranes and mechanics of breathing. Following the last presentation, Dr. Edward P. Radford Jr., of the Harvard School of Public Health, exhibited a 16 mm. teaching film in color on the mechanics of breathing; this film, prepared with the aid of a

grant from the National Foundation for Infantile Paralysis, will be available to departments of physiology for teaching purposes.

The two day course was attended by 170 "students." Among these were well-known professors of physiology. The attendance at the last session of the second day equalled that at the opening lecture of the first day. Answers to a questionnaire indicated that every "student" thought the course was worthwhile; many offered constructive suggestions for future courses.

Among the shortcomings of the course were the following: (1) The conference groups were too large (85 "students" in each). This was unavoidable because of a decision to accept "students" enrolling at the last minute; (2) Not enough mimeographed and lithographed notes and illustrations were available; these had to be mailed to some of the "students" at a later date. This again was due to the unexpectedly large enrollment. (3) Some of the subject material was considered to be too advanced for transmission to students. However, the "faculty" believed that this could not be avoided, since the teacher's background knowledge must go beyond that material actually presented to his students.

The council of the American Physiological Society voted to continue the new type of program for teachers next year and to defray all expenses incurred by the faculty in preparation for the course.—*Dr. J. H. Comroe Jr.*

NEWS DIGEST

Teaching Institute

The Association's third Teaching Institute, on anatomy and anthropology, will be held at the New Ocean House, Swampscott, Mass., October 18-22, immediately preceding the 66th Annual Meeting. Dr. William U. Gardner, professor of anatomy at the Yale University School of Medicine, is chairman.



GEORGE PACKER BERRY, left, chairman of the Committee on Teaching Institutes and Special Studies, and WILLIAM U. GARDNER, chairman of the 1955 Institute.

Attendance is by invitation only. There will be one participant from 83 medical schools in the United States, the 12 medical schools in Canada and one from the Philippines. The list follows:

Alabama, E. Carl Sensenig
Albany, Jack M. Wolfe
Arkansas, Jeff Banks
Baylor, Arthur Kirschbaum
Boston, Arthur M. Lassek
Bowman Gray, Warren Andrew
Buffalo, Oliver P. Jones
California S.F., John B. deC. M. Saunders
California L.A., Horace W. Magoun
Chicago Medical, Leon H. Strong
Chicago, Univ. of, William T. Kabisch
Cincinnati, Roger C. Crafts
Colorado, Theodore S. Eliot
Columbia, Samuel R. Detwiler
Cornell, Don W. Fawcett
Creighton, R. Dale Smith
Dartmouth, Rolf C. Syvertsen
Duke, Joseph E. Markee

Einstein, Ernst Scharrer
Emory, Albert I. Lansing
Florida, James G. Wilson
Georgetown, Othmar Solnitzky
George Washington, Ira R. Telford
Georgia, Lane H. Allen
Hahnemann, Raymond C. Truex
Harvard, George E. Erikson
Howard, W. Montague Cobb
Illinois, Parke H. Simer
Iowa, Jack Davies
Jefferson, J. Lawrence Angel
Johns Hopkins, Allan L. Grafflin
Kansas, Paul G. Rooft
Louisiana, Charles M. Goss
Louisville, James B. Rogers
Marquette, Walter Zeit
Maryland, Frank H. J. Figge
Medical Evangelists, Otto F. Kampmeier
Meharry, William M. Bright
Miami, Robert T. Hill
Michigan, Russell T. Woodburne
Minnesota, Arnold Lazarow
Mississippi, Ira D. Hogg
Missouri, Milton D. Overholser
Nebraska, Edward A. Holyoke
New York Medical, J. Clifford Hayner
New York University, Pinckney J. Harman
North Carolina, Charles W. Hooker
North Dakota, Christopher J. Hamre
Northwestern, Barry J. Anson
Ohio State, Linden F. Edwards
Oklahoma, Ernest Lachman
Oregon, Anthony A. Pearson
Pennsylvania, Louis B. Flexner
Pittsburgh, Davenport Hooker
Puerto Rico, Carroll A. Pfeiffer
Rochester, Karl E. Mason
St. Louis, William F. Alexander
South Carolina, Melvin H. Knissey
South Dakota, Walter L. Hard
Southern California, Paul R. Patek
Southwestern, Harlow W. Ades
Stanford, William W. Greulich
State Univ. N.Y., N.Y.C., James B. Hamilton
State Univ. N.Y., Syracuse, Philip B. Armstrong
Stritch (Loyola), Lincoln V. Domm
Temple, John Franklin Huber
Tennessee, Roland H. Alden
Texas, Donald Duncan
Tufts, Benjamin Specter

Tulane, Harold Cummins
 Utah, Thomas F. Dougherty
 Vanderbilt, Sam L. Clark
 Vermont, Fred W. Dunihue
 Virginia, Univ. of, Carl C. Speidel
 Virginia, Med. Coll. of, Everett H. Ingersoll
 Washington, Univ. of, Richard J. Blandau
 Washington, St. Louis, Edward W. Dempsey
 Wayne, Gabriel W. Lasker
 Western Reserve, Normand L. Hoerr
 West Virginia, T. Walley Williams
 Wisconsin, Otto A. Mortensen
 Woman's Medical, Hartwig Kuhlenbeck
 Yale, Sanford L. Palay
 Alberta, Ralph F. Shaner
 British Columbia, Sydney M. Friedman
 Dalhousie, Richard L. deC. H. Saunders
 Laval, Pierre Jobin
 Manitoba, I. Maclaren Thompson
 McGill, Charles P. Leblond
 Montreal, Louis Poirier
 Ottawa, Joseph Auer
 Queen's, D. C. Matheson
 Saskatchewan, Rudolf Altschul
 Toronto, J. W. A. Duckworth
 Western Ontario, H. Alan Skinner
 Philippines, Fidel Cuajunco.

Committee members, in addition to those who are serving as participants from their medical schools, are: Russell J. Barnett, Harvard; Sylvia H. Bensley, Toronto; George Packer Berry, Harvard; Stanley M. Garn, Fels Research Institute; Roy O. Greep, Harvard; W. Henry Hollinshead, Mayo Clinic; Daniel Mazai, University of California at Berkeley; James L. O'Leary, Washington University; Benjamin D. Paul, Harvard; Marcus Singer, Cornell and William L. Straus, Jr., Johns Hopkins.

Other participants, representing allied disciplines and other organizations dealing with medical education, are: Ivan L. Bennett, Jr., associate professor of medicine, Johns Hopkins; J. Dixon Boyd, professor of anatomy, Cambridge University; Walter J. Burdette, professor of surgery, University of Missouri; Julius H. Comroe, Jr., professor of physiology and pharmacology, University of Pennsylvania; Brown M. Dobyns, associate professor of surgery, Western Reserve University; Hans H. Hecht, associate professor of medicine, University of Utah; John F. Holt, professor of radiology, University of Michigan; John A. Kirchner, associate professor of

otolaryngology, Yale University; Julius B. Richmond, professor of pediatrics, State University of New York (Syracuse); Harris B. Shumacker, Jr., professor of surgery, Indiana University; Douglas H. Sprunt, professor of pathology, University of Tennessee; A. H. Stockard, professor of zoology, University of Michigan; Edward L. Turner, AMA Council on Medical Education and Hospitals; W. Byers Unger, professor of zoology, Dartmouth; William S. Verplanck, professor of psychology, Stanford; Charles O. Warren, The Commonwealth Fund; Stewart Wolf, professor of medicine, University of Oklahoma, and J. Franklin Yeager, National Heart Institute.

MEND News

The next MEND symposium, on "Aviation and Submarine Medicine and Physiology," will be held November 14-15, at Randolph Field, Texas. It will be a three-day session, sponsored by the Air Force with contributions from Navy and other research installations.

Teaching materials on the pathology of agents of warfare are being collected at the Armed Forces Institute of Pathology and other Washington, D.C., facilities, for reproduction and resale to academic departments of pathology. The collection will include photomicrographs, color transparencies, lantern slides, films and film strips portraying pathological changes due to cold injury, thermal burns, radiation effects, blast injury, missile trauma, etc. Dr. John L. Shapiro, of Vanderbilt University, is the technical consultant on the project.

Ten new schools are scheduled to be admitted to the MEND program as of January 1, 1955. Invitations to consider MEND affiliation have been sent out to the deans of all medical schools, with a report on the program's progress to date.

New TV Series

A "live" television tour of American medical research centers will be

beamed over 42 ABC-TV stations in a new documentary series sponsored by CIBA Pharmaceutical Products, Inc.

"Medical Horizons" will be presented every Monday evening for 26 weeks. It will feature leaders in clinical and experimental medicine, demonstrating the advances being made in medical science. The series will be narrated by Quincy Howe.

Each telecast will originate at a different hospital, clinic or laboratory. On October 17, the viewers will visit the University of Pennsylvania School of Medicine, to trace the career of a typical medical student as he acquires the skills and knowledge of his profession. The following week, the show will be a behind-the-scenes

presentation of the training of a resident intern at Johns Hopkins.

The program is being sponsored by CIBA with the cooperation of the American Medical Association.

New Medical Publication

CIBA has announced the publication of an eight-page tabloid newspaper, the first issue of which appeared on September 12. "Medical News" will appear every other week, and will be distributed free of charge to all physicians.

Reports from special correspondents in Europe, Latin America and Asia will be a feature of the new paper. Accounts of all major medical and scientific meetings, formerly published as CIBA reports, will also be included.

College Briefs

Chicago Medical

Dr. BERTRAM LEVIN, director of the department of diagnostic roentgenology at Michael Reese hospital, has been appointed clinical assistant professor of radiology in the department of surgery.

A \$16,000 grant from the American Cancer Society has been awarded to Dr. PHILIPPE SHUBIK for research on lung cancer.

U. of Chicago

Dr. C. KNIGHT ALDRICH has been appointed professor of psychiatry and chairman of the department. Dr. Aldrich was formerly assistant professor of psychiatry at the University of Minnesota, where he also served as liaison psychiatrist with the department of internal medicine.

A \$50,000 grant was received from the Alexander and Margaret Stewart Trust Fund to support the cancer research program. Similar grants have been received annually since 1950.

Florida

Dr. FRANK W. PUTNAM is the new head of the department of physiolog-

ical chemistry. He was formerly a staff member of the Argonne Cancer Research Hospital in Chicago.

Georgia Medical

Dr. WILLIAM H. MORETZ has been appointed professor of surgery and chairman of the department. He was formerly associate professor of surgery at Utah College of Medicine.

Dr. WALTER GOWANS RICE, former director of the school of medical technology at St. Louis University, has been appointed associate professor of pathology.

A grant of \$24,491 has been awarded by the National Institutes of Health to Dr. WILLIAM F. HAMILTON Sr., professor of physiology, for research in physiological and clinical cardiovascular studies. Dr. Hamilton is president of the American Physiological Society.

Illinois

Dr. THEODORE B. SCHWARTZ has been appointed associate professor of medicine. He has also been named chief of the new endocrinology and



The newly-completed \$9,000,000 University of Mississippi Medical Center at Jackson, which is now in full operation. The center includes a 350-bed teaching hospital and other facilities, among them the school of nursing and the school of medicine. Dr. David S. Pankratz is director of the center.

metabolic diseases division of the department of medicine at Presbyterian hospital.

Dr. WILLIAM F. T. KELLOW has been named assistant dean, a newly-created post. Dr. Kellow is also assistant professor of medicine.

Michigan

Dr. HALVOR N. CHRISTENSEN has succeeded the late Dr. HOWARD B. LEWIS as professor and chairman of the department of biological chemistry. Dr. Christensen was formerly professor and chairman of the department of biochemistry and nutrition at Tufts.

Dr. MINOR J. COON has been appointed professor of biological chemistry and Dr. WILFRID T. DEMPSTER has been promoted to professor of anatomy.

Mississippi

Full operation of the medical center at Jackson began last month with the opening of a four-year school of medicine which includes five entirely new teaching departments.

Construction of the center, which cost \$9,000,000, began in 1950. It now includes a 350-bed teaching hospital, an outpatient clinic, research facilities, a library and a school of nursing, in addition to the school of medicine. Dr. DAVID S. PANKRATZ, dean of

the school of medicine, has been appointed director of the center.

Chairmen of the new departments are Dr. J. R. SNAVELY, medicine; Dr. MICHAEL NEWTON, obstetrics and gynecology; Dr. BLAIR BATSON, pediatrics; Dr. ROBERT D. SLOAN, radiology, and Dr. JAMES HARDY, surgery.

NYU—Bellevue

A grant of \$136,404 has been received from the National Foundation of Infantile Paralysis to provide for an intensified teaching program in the concepts and basic techniques of total rehabilitation, at the graduate and undergraduate level. The program will be administered by Dr. HOWARD A. RUSK, professor and chairman of the department of physical medicine and rehabilitation.

Another grant from the foundation, for \$95,372, went to Dr. JOSEPH G. BENTON, associate professor of clinical physical medicine and rehabilitation, to support research and patient care at the respirator care and rehabilitation center of Goldwater Memorial hospital. A third grant of \$13,651 was awarded to Dr. MARK H. ADAMS, associate professor of microbiology, to continue his study of the relationships between viruses and the living cells they invade.

North Carolina

Dr. CARL E. ANDERSON, associate professor of biological chemistry and nutrition, has received a grant of \$13,200 from the Life Insurance Medical Research Fund for a two-year study of the chemistry and metabolism of acetal phosphatides.

Oklahoma

The first full-time head of the department of pediatrics is Dr. HENRY B. STRENGE, a member of the faculty since 1947. He succeeds Dr. CLARK H. HALL, who will continue as professor in the department.

Tennessee

Dr. EDWARD H. STORER has been appointed assistant professor of surgery and director of the Surgical Research Laboratories. He succeeds Dr. JAMES D. HARDY, who resigned to become chairman of the department of surgery at Mississippi.

A new \$371,000 medical-surgical building has been added to the university's medical units. The new seven-story structure adds 40,000

sq. ft. of space to Memphis' medical center.

Texas

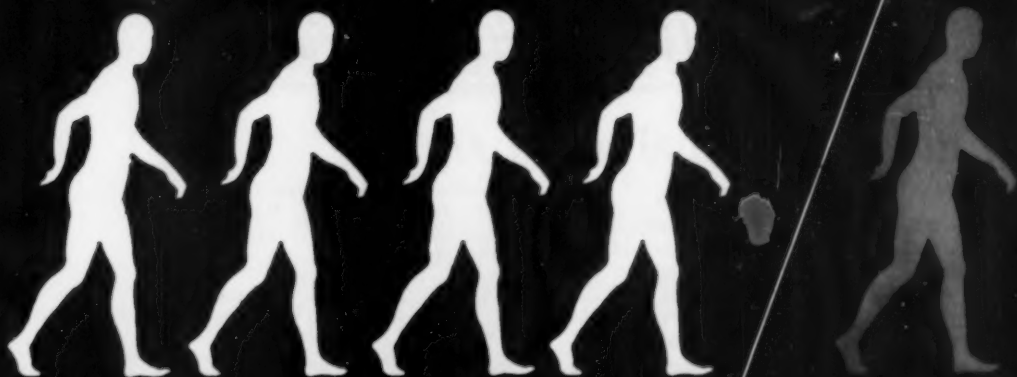
Dr. JACK A. PRITCHARD has been appointed professor and chairman of the department of obstetrics and gynecology, succeeding Dr. WILLIAM F. MENGERT, who is now at Illinois. Dr. Pritchard was formerly at Western Reserve.

Vermont

The proposed new department of preventive medicine has received an award from the Commonwealth Fund, which has made available a grant of \$23,900 toward the new project. The money will also be used in setting up a four-year regional medical needs project, which it is estimated will cost \$117,800.

Washington

Dr. ROBERT J. GLASER, formerly assistant dean, has now been appointed associate dean. Dr. Glaser is also an assistant professor in the department of medicine.



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1. Winsor, T., Humphreys, P.: *Angiology* 3:1 (Feb.) 1952.
2. Plotz, M.: *N. Y. State J. Med.* 52:2012 (Aug. 15) 1952.
3. Dailheu-Geoffroy, P.: *L'Ouest-Médical*, vol. 3 (July) 1950.
4. Russek, H. I., et al.: *Am. J. M. Sc.* 229:46 (Jan.) 1955.

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Audiovisual News

Film Catalog Available

The Medical Audio-Visual Institute has published its first catalog of films. Copies have been sent to the medical school audiovisual coordinators and librarians. Additional copies are available for faculty members upon request to the Medical Audio-Visual Institute at the address of the Association of American Medical Colleges.

Attention is directed to other film sources listed below.

Some Film Sources

The following list of sources includes the major libraries but is by no means all-inclusive. Many pharmaceutical houses have films for loan and have published catalogs or lists available upon request. Likewise, many other individuals and departments have a limited number of films for loan. The following agencies issue catalogs or lists:

American Cancer Society, 521 W. 57th St., New York, N. Y.

American Heart Association, Inc., 44 E. 23rd St., New York 10, N. Y.

American Medical Association, Film Library, 535 N. Dearborn St., Chicago 10, Ill.

Armed Forces Institute of Pathology, Director, Medical Illustration Service, 7th St. & Independence Ave. S.W., Washington 25, D.C.

British Information Services, Films & Publications Div., 30 Rockefeller Plaza, New York, N. Y.

Churchill-Wexler Film Productions, 801 N. Seward St., Los Angeles 38, Calif. (Orthopedic Surgery).

Communicable Disease Center, U.S. Public Health Service, P.O. Box 185, Chamblee, Ga. (Parasitology & Tropical Medicine).

Davis & Geck Inc., Surgical Film Library, 1 Caspar St., Danbury, Conn.

Jacques Holinger Memorial Fund, 700 N. Michigan Ave., Chicago, Ill. (Otorhinolaryngology).

Mervin W. LaRue, Inc., 159 E. Chicago Ave., Chicago 11, Ill.

Dr. Joseph E. Markee, professor of anatomy, Duke University School of Medicine, Durham, N. C.

Medical Film Guide, Inc., 167 W. 57th St., New York 19, N. Y.

National Foundation for Infantile Paralysis, 120 Broadway, New York, 5, N. Y.

Chief, AV Training Aids Section, Professional Division, Bureau of Medicine & Surgery, Department of the Navy, 23rd & E. Sts., Washington, D. C.

Psychological Cinema Register, Pennsylvania State College, State College, Pa.

Society of American Bacteriologists, University of Pennsylvania School of Medicine, 36th & Hamilton Walk, Philadelphia 4, Pa.

Sturgis-Grant Productions, Inc., 332 E. 44th St., New York 17, N. Y.

Philip Thorek, M.D., 25 E. Washington St., Chicago 2, Ill. (Surgery).

Wistar Institute of Anatomy and Biology, Woodland Ave. & 36th St., Philadelphia 4, Pa.

Latest data on **effectiveness** of **Furadantin®**

brand of nitrofurantoin, Eaton

in urinary tract infections

Investigators:

Flippin, H. F., and Eisenberg, G. M.:
Antimicrobial Therapy
in Medical Practice, Philadelphia,
F. A. Davis Co., 1953, p. 40.



Latest data on effectiveness of Furadantin

Clinical studies have demonstrated rapid
clinical response in cases of
cystitis and pyelonephritis,
including infections caused by
refractory organisms.

Trafton, H. M., et al.: New
England J. Med. **252**: 383, 1955.



13 acute cases . . . 6 appeared cured . . .
6 markedly improved with no relapses.

36 chronic infections:
30 showed symptomatic improvement,
frequently within 24 hours.

Beutner, E. H., et al.:
Antibiotics Annual, 1954-1955,
New York, Medical
Encyclopedia, Inc., 1955, p. 988.



30 chronic urinary tract infections:
Of 47 strains of bacteria isolated
from these patients, 29 strains (62%)
were eradicated by Furadantin.


Hasen, H. B., and Moore, T. D.:
J.A.M.A. **155**: 1470, 1954.



Of patients with acute urinary tract
infections, 95.7% were benefited. Patients with
chronic infections and those with
organic or obstructive lesions were
benefited in 82% of cases.

Dosage — average adult: four 100 mg. tablets daily, 1 tablet
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Furadantin tablets, 50 and 100 mg. in bottles of 25 and 100.
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ACS Approved Films

The 1955 list of Medical Motion Pictures Approved by the American College of Surgeons is contained in the September-October BULLETIN OF THE AMERICAN COLLEGE OF SURGEONS. The authorship, source and running time of each film is given. Accompanying the list is a classification of the films according to the Standard Nomenclature of Diseases and Operations.

Reprints of Medical Motion Pictures Approved by College in 1955 are available upon request from the Committee on Medical Motion Pictures, American College of Surgeons, 40 East Erie St., Chicago 11, Ill.

Stereo Camera

A stereo camera invented by Dr. David Donaldson of the Howe Laboratory of Ophthalmology, Harvard Medical School, is said to eliminate the "trial and error" procedures in taking 3-D close-ups of relatively small objects such as the human eye. All scales (bellows extension, interlens distance and parallax correction) are calibrated according to magnification. The appropriate magnification is selected, all scales set to this magnification number, and the camera is focused. A variable intensity light source ("strobe") is powered by a separate amplifier, and is also calibrated according to magnification.

Summaries of Film Reviews

The Inner Ear

35 min., sd., color, 16 mm., 1951.

The method of the film is shown: optical and time magnification, artificial tissue transparency and demonstration of fluid movements. The function of the labyrinth is demonstrated. The ossicles are shown in relation to the tympanum and oval window. The Helmholtz theory is related to cochlear structure. Pathology of the inner ear (Ménière's syndrome), the acoustic reflex, and the function of the intratympanic muscles (theories of adaptation or protection) are shown.

This film is remarkable for its experimental material and approaches, and for the extraordinary shots of human and animal function. Unfortunately, however, the high quality of the visual content is not matched by an equal skill in organizing and presenting the experimental data. Inadequate are the sound track music, the superfluous salesmanship for the use of a camera, the meaningless slides of Ménière's disease, the poor and usually absent orientation which brings much confusion throughout, and the failure to take advantage of splendid shots of structure and function.

For those specializing in otology, the film is impressive, useful and may well be completely intelligible. For students, however, extensive preparation, interpretation and recurrent orientation are necessary for understanding, despite the rich substance of the film. D.S.R., with K.U.M.C. Panel, 1955.

Audience: Students of medicine, hearing and speech, residents in otology.

Production Data: **Authors:** H. G. Kobrak, M.D., Ph.D.; J. E. Hind, B.S.E.E.; Otological Research Laboratories, University of Chicago; **Producer:** Medical Film Guild, New York, N.Y.

Distribution: Medical Film Guild, 506 W. 57th St., New York 19, N.Y., **Loan.**

—NEW!—

A Short History of Medicine

ERWIN H. ACKERKNECHT, M.D., *The University of Wisconsin Medical School.* Drawing on original source material, this survey presents each major trend in the history of medicine, interprets its application for modern practice, and brings out its significance in terms of scientific, sociological, and economic developments.

Written by a physician who is also an accomplished historian, the book discusses the vital achievements, the men who made them possible, and other salient facts of medical history, with emphasis on progress since 1800. Well suited as a textbook, it gives balanced coverage to surgery and internal medicine, clinical treatment, preventive measures, medical practice and the scientific discoveries on which it is based. 31 illus.; 258 pp. \$4.50

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Published May, 1955: Volume 6

ANNUAL REVIEW OF MEDICINE

David A. Ryland, *Editor*

459 pages

20 chapters

Annotated List of Reviews

"... excellent reference book." *Surg., Gynecol. Obstet.*, 1955

"The scholarly and authoritative character of the reviews is of the highest order." *J. Chronic Diseases*, Jan., 1955.

"Valuable and worthwhile series . . . unreservedly recommended." *Am. J. Med. Sci.*, Feb., 1955

Reviewers:

A. L. Bloomfield
T. F. McNair Scott
W. N. Valentine
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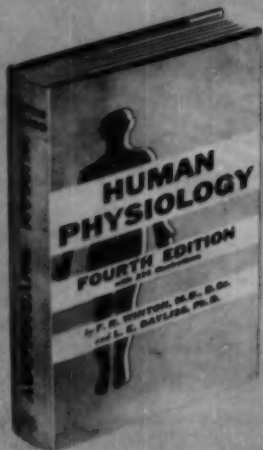
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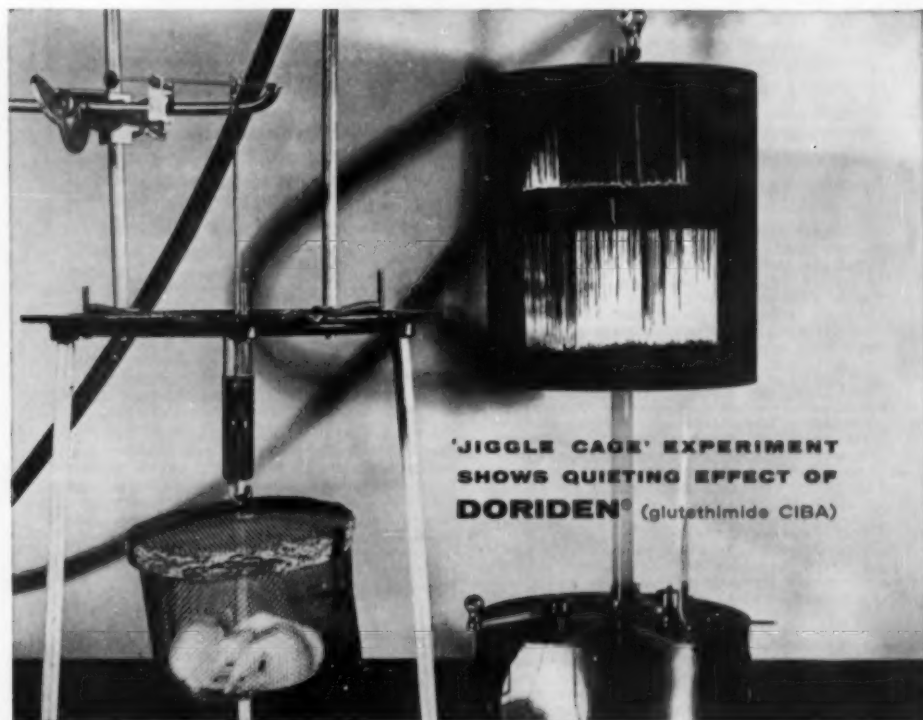
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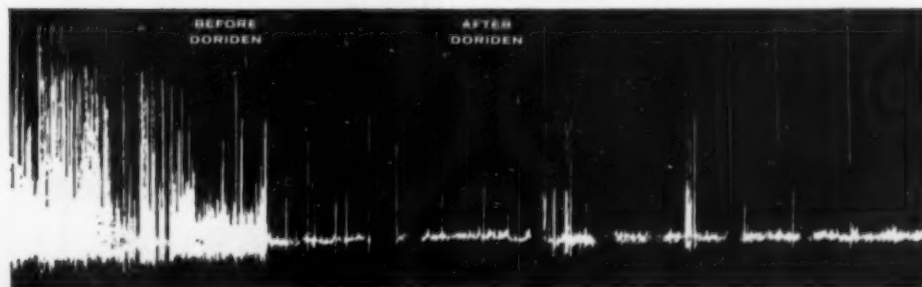


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Personnel Available

• **BACTERIOLOGIST:** Male, 38, M.Sc., married. Seven years teaching and research experience in medical bacteriology. Desires part-time position with opportunity to work toward advanced degree. Present total college credit 260 semester hours. Present position an instructor in pathogenic bacteriology in medical school. Address: A-164.

• **PUBLIC HEALTH AND PREVENTIVE MEDICINE:** M.D. M.P.H. Fellow of the American Public Health Association, age 44, to be discharged from Army tour May 31, 1955. Desires to teach in a department of public health and preventive medicine, in a medical school. Six years experience in the practice of public health with some teaching experience, other experience in psychiatry and general practice. Address: A-165.



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Information for these columns should reach the Personnel Exchange, Journal of Medical Education, 185 N. Wabash Ave., Chicago 1, Ill., not later than the 10th of the month which precedes the month in which the listings will appear.

• **ANESTHESIOLOGIST:** 32, married, three children, veteran. Interested in heading a university anesthesia department. Five years experience in internal medicine before entering anesthesiology. Experienced in teaching and research. At the present time completing training at leading university hospital. Available December 1. Address: A-166.

• **VIROLOGIST—BACTERIOLOGIST:** Male, Ph.D., age 30. Teaching and research experience in medical bacteriology, general microbiology and virology. Tissue culture experience as applied to virology. Desires teaching position with opportunities for research. Address: A-167.

• **OBSTETRICIAN-GYNECOLOGIST:** Male, married, Board eligible. University teaching experience. Seeking change of location. Prefer full-time permanent academic position with opportunities for clinical investigation. Address: A-168.

• **PHYSIOLOGIST:** Ph.D., 39, broad biological training. Wide experience in teaching and research. Desires teaching position with opportunity for research. Experience in biometry. Research interest and experience in connective tissue permeability and biological effect of x-rays. Immediately available. Address: A-169.

• **PEDIATRICIAN:** Female, single. Candidate for M.P.H. Diplomate, American Board of Pediatrics. Interested in child health, teaching and research positions. Available July 1. Address: A-170.

• **INTERNIST-CLINICAL PATHOLOGIST:** Certified in both specialties, age 44, recently discharged from military service. Extensive research and teaching experience. Listed in coming editions of Am. Men of Science and Blue Book of Awards. Desires permanent ranking academic and/or research position. Will consider directorship of hospital laboratories. Address A-171.

• **INTERNIST:** Age 31, M.Sc. (Med.), desires full-time administrative or clinical teaching post in a medical school or hospital. Has teaching and research training. Available September 1955. Address: A-172.

• **SURGEON:** Age 32, veteran, married. University-trained. Diplomate American Board of Surgery. At present instructor in surgery large midwestern university hospital, desire full or part-time academic appointment for teaching and research as well as clinical. Address: A-173.

• **PHYSIOLOGIST-ENDOCRINOLOGIST:** Ph.D., married, veteran. Eight years teaching experience. Presently assistant professor at medical school. Wishes to relocate on the Pacific Coast or in Canada for health reasons. Member of many professional societies. Publications. Desires teaching position and research opportunities. Available summer 1956. Address: A-174.

• **OBSTETRICIAN - GYNECOLOGIST:** 45, married. Diplomate of American Board. Now assistant professor in large eastern university college of medicine and full-time director of service in an affiliated medical center. Extensive and varied clinical experience. Teaching experience at both undergraduate and postgraduate levels. Experience in administrative and executive capacities. Several clinical scientific publications. Desires full-time teaching position as department head in a university college of medicine with ample provisions and opportunity for both basic and clinical research. Address: A-175.

• **GERMAN PHYSICIAN AND SURGEON:** Educated Frankfurt/Main University, now in practice in Frankfurt/Main. Seeks academic position in United States, also information on residencies or internships. Address: A-176.

• **RESEARCH ASSOCIATE:** in fields of virology, bacteriology or immunology in a medical college. Ph.D. in bacteriology from State University of Iowa. Address: A-177.

• **PATHOLOGY-BACTERIOLOGY:** Desires teaching and research. Presently director of laboratories and medical examiner in U. S. Overseas Territory (Guam). Research work on tuberculosis and amyotrophic lateral sclerosis. Publications, societies. Ph.D. in microbiology. Teaching experience. Address: A-178.

• **ANESTHESIOLOGIST:** M.D., Ph.D., bio-chemistry and pharmacology, university trained and experienced. Available and interested in opportunity, preferably East coast, beginning July. Address: A-179.

• **MEDICAL WRITER:** Woman, B.S., B.J., University of Missouri, 1950. Major in special writing; five years newspaper experience; will have completed 16 credit hours in university school of medicine by August. Membership in Theta Sigma Phi and Kappa Tau Alpha, national honorary journalism fraternities. Available September 1. Address: A-180.

• **PHYSIOLOGIST:** Ph.D., 33. At present holds teaching and research position in medical school (6 years). Present rank assistant professor. Desires teaching position with research opportunities. Address: A-181.

• **MICROBIOLOGISTS** 24, Indian, B.Sc. (Microbiology) and B.Sc. (Chemistry) Bombay University. Experience in virus research and laboratory and serological work. Desires to study for Ph.D. in microbiology or bacteriology. Prepared to work on stipend or fellowship under any capacity. Address: A-182.

• **BIOCHEMIST:** Chemical pathologist, 26, Indian, B.Sc., M.Sc. Bombay with biochemistry, chemistry of food and drugs, first class B.Sc. (tech.) Research experience in enzymology, sterols. Taught chemical pathology, hospital biochemist for three years. Desires postgraduate studies in biochemistry or chemical pathology leading to Ph.D. Prepared to work on stipend or fellowship in any capacity. Address: A-183.

• **PSYCHIATRIST:** 31, male, M.D., B.A. (psychology), seeks part-time teaching position in Philadelphia area. Experience in teaching at graduate and undergraduate level. Dynamic orientation. Address: A-184.

• **PHYSIOLOGIST:** Ph.D., 29, married. Experience in research and teaching mammalian physiology. Research interest in neurophysiology and comparative physiology. Publications. References. Desires teaching-research position. Address: A-185.

• **SURGEON:** University trained, certified by general and thoracic boards, early 40's, family. Experienced in applied cardiopulmonary physiology as well as all phases of thoracic and cardiac surgery. Presently director of large teaching unit in East. Publications include basic investigation. Desires relocation, preferably full-time, with opportunity to develop own unit along three lines, service to patients, teaching and investigation. Address: A-186.

• **MEDICAL ILLUSTRATOR:** Male, single, 27, draft exempt, presently employed full-time in a university medical school and hospital. Desires changes and position with better future. Six years actual experience in scientific and technical illustration for lantern slides and publication. References and samples will be furnished. Address: A-187.

• **ANATOMIST-ENDOCRINOLOGIST:** Ph.D., 32, family, desires teaching-research post in medical school. Three years experience directing endocrine and pathology sections in pharmaceutical house. Good teacher with experience in the various phases of anatomy. Publications and societies. Will accept administrative responsibilities. Available September 1, 1955. Address: A-188.

• **MEDICAL WRITER:** 42, honor graduate of University of Illinois medical writing curriculum of the school of journalism. Publications, societies. Desires position as medical writer. Address: John W. Torrance Jr., 1731 E. 72nd St., Chicago 49, Ill.

• **SURGEON:** B.S., Harvard; M.D., Yale; trained university hospital. Diplomate, general surgery, F.A.C.S. Four years successful private surgical practice, one year partner in surgical group. Prefers academic appointment as either assistant or associate professor of surgery, any locality. Available September 1; early forties. For further information please write Woodward Medical Bureau, 185 N. Wabash Avenue, Chicago, Ill.

• **Ph.D.:** Doctorate in zoology-endocrinology major. Have engaged in research in pharmaceutical industry in endocrinology, pharmacology, biochemistry, pathology and toxicology. Has served as research assistant at university, and has done pharmaceutical research for the Army. Seeks teaching and research position in medical school. Address: A-189.

• **HISTOCHEMIST:** For research project in large hospital in the East. Salary dependent on training and experience. Address: A-190.

• **HOSPITAL MEDICAL DIRECTOR (administrator):** Male, 47, married, M.D.; MPH in hospital administration from Yale. Experience with AMA's Council on Medical Education and Hospitals as member of field staff representing Council and Joint Committee on Accreditation of Hospitals; also assistant director of division of hospitals and graduate education. Seeks administrator position with hospital operating an approved graduate training program for interns and residents. Address: A-191.

• **INTERNIST:** Male, 30, interested in full or part-time medical school affiliation. Has had three year residency at large midwestern medical school. Presently taking one-year period of training in endocrine and metabolic diseases, involving both clinical and research aspects. Address: A-192.

• **MICROBIOLOGIST:** Medical, male, Ph.D., 30. Teaching experience in medical bacteriology, parasitology. Present position, assistant professor of microbiology in medical college. Research experience in immunology. Sigma Xi, publications. Desires teaching appointment with research opportunities in a medical school. Address: A-193.

• **PATHOLOGIST:** 43, male, pre-war foreign graduate. Completing four years residency in pathological anatomy and clinical pathology in July 1956. Trained in large institution with university medical school connection. Working in U. S. hospitals since 1948. Desires permanent position with teaching institution. Address: A-194.

• **PEDIATRICIAN:** male 46, married. Amer. Board of Pediatrics, masters degree in pathology. Wishes teaching position in medical school or combined teaching, student health position. College teaching experience, 7 years. Address: A-195.

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